UNIVERSITY OF TURKU

ABSTRACT

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Subject	Futures Studies	Date	26.05.2020
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Abstract

It is important to improve strategies and interaction between research, policy and professionals practice sector. Research translation activities are seen to have an essential role in order to transfer evidence to the core of policy decision making. This study aims to find out whether future workshop could work as an interface and platform for evidence-based policy and knowledge translation activities, fostering better evidence-based decision making by offering tools and methods to improve the knowledge translation process. It discovers, what factors should be considered important when using future workshop as a platform for presenting new evidence. The study also finds out, if and how a future workshop effected participants work, working community or services at any level.

This study was conducted in 2015 as a part of the Aquadigm research project. The project consisted series of future workshops where the participants were invited to work under the topic lake management in 2030. What made the workshop exceptional for futures studies was that for the basis of the workshop working new, not yet published, research evidence regarding the lake management method, aeration, was revealed. This study builds its case around the last of six workshops. Four of the participants were interviewed in a theme interview six months after participating the project.

This study revealed that the most significant factors of the workshop were other participants, the duration of the workshop, and facilitation of the conversations. The credibility of the person presenting the evidence was mentioned as a key factor of representing the new evidence. The participants felt that the new evidence aroused conversation around the topic, but it did not have a big influence in the scenarios formed in the workshops. Except for one, all participants did mention that the future workshop influenced their work in some way. All interviewees thought that they will take more critical attitude towards aeration in the future.

This study revealed that future workshop could possibly work as an interface and platform for new evidence and knowledge translation activities. However, further studies must be performed concerning different future workshops models in order to find the best suitable workshop model for enhancing the translation of the new scientific evidence and its utilization.

Key words	Evidence-based policy, future workshop, knowledge translation

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Tiivistelmä

Jotta päätöksenteko perustuu aina parhaaseen saatavilla olevaan tietoon, vuoropuhelua tutkimustulosten, päättäjien ja yksityisen sektorin välillä tulisi kehittää. Tutkimustietoa pystytään nostamaan päätöksenteon keskiöön välittämällä tutkimustietoa tehokkaasti sidosryhmiä hyödyntäen. Tämä tutkimus pyrkii selvittämään, voiko tulevaisuusverstas toimia tutkimustietoon pohjautuvan päätöksenteon ja tiedonvälittämistoimien kanavana ja alustana vahvistaen parempaa todisteperusteista päätöksentekoa tarjoamalla työkaluja ja metodeja parempien tiedonvälittämistoimien saavuttamiseksi. Lisäksi selvitettiin, mitkä tekijät osoittautuvat tärkeiksi, kun tulevaisuusverstasta käytetään tutkimustiedon esittelyssä sekä oliko tulevaisuusverstaalla siirtovaikutusta osallistujien työhön, työyhteisöön tai heidän tarjoamiinsa palveluihin.

Tutkimus perustuu vuonna 2015 järjestettyihin tulevaisuusverstaisiin, jotka järjestettiin osana Aquadigm-tutkimusprojektia. Tulevaisuudentutkimuksen näkökulmasta verstaat olivat poikkeuksellisia, sillä verstaissa esitettiin uusia, julkaisemattomia tutkimustuloksia. Tulokset toteavat järvienkunnostuksessa yleisesti käytetyn menetelmän, hapetuksen, olevan tehoton ja jopa haitallinen hoitomuoto. Aqadigm-projektin puitteissa järjestettiin kuusi tulevaisuusverstasta ja tämä tutkimus keskittyy niistä viimeiseen, yksityisellä sektorilla työskenteleville asiantuntijoille tarkoitettuun, tulevaisuusverstaaseen. Aineisto kerättiin teemahaastattelulla neljältä verstaaseen osallistuneelta asiantuntijalta.

Tutkimuksen mukaan tärkeimpiä tekijöitä tulevaisuusverstaan onnistumisen kannalta ovat verstaan osallistujat, verstaan kesto sekä verstaan fasilitaattoreiden toiminta. Uuden tutkimustiedon kannalta oleelliseksi todettiin tiedon esittelijän uskottavuus. Osallistujat kokivat uuden tutkimustiedon virittäneen keskustelua, mutta sillä ei ollut suurta merkitystä verstaassa muodostettujen tulevaisuusskenaarioiden kannalta. Yhtä lukuun ottamatta kaikki osallistujat olivat hyödyntäneet verstaassa saatuja ajatuksia tai uusia tietoja omassa työssään jollain tavalla. Kaikki vastaajat kertoivat suhtautuvansa hapetukseen tulevaisuudessa aiempaa kriittisemmin.

Tutkimuksessa saatiin viitteitä siitä, että tulevaisuusverstas saattaisi olla toimiva alusta uuden tutkimustiedon esittelyssä sekä välitettäessä tutkimustietoa päätöksenteon keskiöön. Lisää tutkimustietoa kuitenkin tarvitaan, jotta saadaan selville, minkälaiset tulevaisuusverstaat edistävät parhaiten uuden tutkimustiedon välittymistä päätöksentekoon ja käytäntöön.

Avainsanat	Evidence-based policy, future workshop, knowledge translation

UNIVERSITY OF TURKU
Turku School of Economics

IN FRONT OF EVIDENCE

FUTURE WORKSHOP AS AN INTERFACE OF SCIENTIFIC EVIDENCE AND PLATFORM FOR EVIDENCE-BASED POLICY AND MANAGEMENT APPROACHES

Master's Thesis
in Futures Studies

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1 INTRODUCTION

1.1 Background

Since the 1930's there has been a widely accepted paradigm in limnology that aeration has an essential role in lake restoration. It seems that it has been taken for granted that aeration prevents or strongly diminishes internal phosphorus in lakes. However recent studies have shown that the role of aeration in terms of lake restoration method is not as centric as thought. In some cases, it can even have a negative effect on the water ecosystem in lakes. (Horppila 2015.) There has been mutual conversation about the in-effectiveness of aeration before but not until recent years there has been scientific evidence about it.

This study is rooted to the AQUADIGM research project, which studied the changing circumstances and paradigms of lake management and restoration (Horppila, Massa & Tapio 2015). This study explores how the scientific evidence, blended in future workshop and scenario development, is influencing on participants' attitudes, actions and thinking. The study also investigates how future workshops could be used as an interface to adopt new scientific evidence, and an application for approach called evidence-based policy.

According to Head (2015) the systematic use of evidence and scientific aspiration is limited by democratic debate, stakeholders lobbying and popular opinion. In that sense companies who are involved with lake restoration might not be able to bring rational exploitation of the evidence when they are creating future images and scenarios in the workshop. It is useful to research how participants of future workshops are able to exploit contradictory data. It is also interesting how different companies with different interests will adopt and use the evidence.

According to Head (2015) academics who work with constructing strong information bases and improving techniques for analysis and evaluation, consider the evidence-based policy approach very attractive. For instance, in health care policy field it has become a 'catch cry' concept and growing literature aims for better understanding the goals of evidence-based policy and best use of the best quality research as part of it, when seeking the answers for 'what works' (Lancaster 2014). In this research setting future

studies method is used as a platform for evidence-based approach and the future workshop is ought to work as an interface for the new scientific evidence. One could see this as a reunion of policy science and future studies, that were according to Bell (2005) overlapping each other until 1970s, but which were seen grown apart two decades later.

Workshop working itself toward evidence-based policy is not an exceptional event and it has been used for instance in medical science (Jauregui et al. 2015). However, the research setting in this study is rare and interesting since it doesn't happen very often that strong empirical research, where the nature of knowledge is highly objective, is brought to the highly normative and heuristic policy-making environment, where the depth of objectivism is limited and relevance to practice is warmly welcomed. The evidence-based policy cannot be adopted to the future research itself since there is no method to get objective evidence from the future. However, it is used as a positivist research ingredient, which is foreseen to increase the credibility and thrust toward futures studies and its methodology, and thus support better decision making.

Now in 2020 the evidence-based decision making is maybe more relevant that it has ever been during the twenty first century. The World is facing health crises due the Corona virus outbreak and the COVID19 disease that it is causing. Fast and right decisions are demanded from the governments that have thirst for the best possible research knowledge and its use. It perhaps makes the topic of this study even more current and relevant.

1.2 AQUADIGM research project

There are serious problems in many lakes, reservoirs and streams around the world (Cooke, Welch, Peterson & Nichols 2005). In Finland There are almost 200 000 lakes and one fifth of those lakes suffer from antrhopogenic eutrophication (Nygrén 2019). Nutrien levels of mainly phosphorus (P) and nitroegen (N) are excessivly high in many lakes mainly because of the nutrien flows from agriculture (Cooke et al. 2005).

This research is rooted to AQUADIGM research project, which was funded by Finnish Academy's AKVA program in 2015. The AQUADIM research project studied the changing circumstances and paradigms of lake management and restoration. The aim of the project was to re-evaluate the validity of long-lasting paradigms on the functioning and management of aquatic ecosystems. Also, the project pursued to analyze the possible

paradigm shifts for the management of aquatic ecosystems. AQUADIGM was transdisciplinary research project and the consortium included three partners: Aquatic sciences and Environmental Change & Policy departments from University of Helsinki and Finland Futures Research Centre from University of Turku. The full name for the research project was "AQUADIGM The Function and Management of Aquatic Ecosystems in a Changing Environment: the Effects of Paradigm Shifts". (Horppila, Massa & Tapio 2015)

The consortium leader's, professor Jukka Horppila's and his team's researches in Vesijärvi (lake in Finland) formed a core for AQUADIGM (lähde on tutkimussuunnitelma). The data about aeration was based on a study where the effects of hypolimnetic aeration were compared in two Finnish lakes. Researchers studied data from Lake Enonselkä basin which was aerated and non-aerated basin of Lake Vesijärvi. Study remarked that aeration did not prevent hypoxia and oxygen penetration depth did not increase. In general, the aeration effort did not have positive effects on sediment quality. (Horppila, Köngäs, Niemistö & Hietanen 2015.)

As part of the AQUADIGM-project, Finnish Futures Research Centre executed a research regarding lake management and restoration in 2030. The purpose of the research was to find out what kind of futures images and scenarios different lake management related interest groups would create for the year 2030. For creating the images and scenarios five future workshops were arranged. In the workshops the drivers causing changes in aquatic environment and the consequences of those changes, the current state of the lakes and their usage, and lake management and restoration methods were widely discussed. In the beginning of the workshop new unpublished research information regarding the internal stress of the lakes and aeration was given, so that the new information could be deployed to the workshop working. (Nygrén 2016.)

The workshops were held in Autumn 2015, and they were designed for different target groups: aquatic students from Helsinki University, local lake stakeholders of lake Tuusulanjärvi, employees of the Centre for Economic Development, Transport and the Environment, professional limnologists and representatives of private sector companies, who were mostly limnologist. The workshops had almost identical content, including the same introductions, presentations and working phases. The workshop content, its working methods and results are presented in chapter 3, Methods and materials.

This paper forms a case study for the last workshop, where the expert group was formed of private sector professionals. The future workshop is evaluated in terms of its

performance as a platform for translation of scientific evidence and evidence-based policy.

1.3 Research questions

This study will find out what happens when experts from private lake and water management -related companies are invited to the future workshop where is revealed new scientific data that doesn't support 'business as usual' -thinking anymore. The study will also discover how the new research data are adopted and what kind of impact it might have on participant's thinking toward the evidence and on the company s/he is working with. Can one piece of evidence cause a change and pave the way for new policies and management practices in lake restoration? This study aims to examine could futures studies and its methods work as an instrument or tool for making evidence-based policy. Moreover, it pursues the show how the future workshop could foster the knowledge generation and work as an intermediary in knowledge translation process.

The research questions presented in this study are:

- Could futures studies perform as an interface for new scientific evidence and as a platform in evidence-based policy endeavor? Moreover, did the future oriented working open wider perspective for lake management and the evidence's role in it?
- What factors should be considered important when using future workshop as a platform for presenting new evidence and aiming for evidence-based policy making?
- Has the workshop and presented evidence had any influence on participants' work, working community and services in any level?

The next chapter introduces the relevant concepts that will determine how the future workshop and its related methodology is connected to the evidence-based policy approach. Firstly, the concept of evidence-based policy will be defined and discussed, and the key factors and terminology behind the successful evidence-based policy practices shall be highlighted. Secondly, the future workshop and its future planning tools, scenarios are presented and discussed thoroughly since they are forming the structures of the

platform for evidence-based policy. The chapter two ends to the conceptual framework scheme, which glues the theory together and shows the future studies design for the evidence-based policy creation process and introduces the writer's vision regarding the knowledge translation process in the context future studies methodology.

Chapter three introduces the workshop day and the methods how the workshop was evaluated in order to find answer to the research questions. It introduces the semi-structured theme interviews that were held few months after the workshop, and the direct content analysis that was used for analyzing the answers according to analyzing scheme that is reflected from the conceptual framework scheme. Chapter four shows the key findings of the interviews, and chapter five discuss and concludes how the future workshop performed as a platform for evidence-based policy, and what should be taken into consideration when developing such a platform in the future.

2 THEORETICAL FRAMEWORK

2.1 Evidence-based policy

The main purpose of this study is to evaluate how scientific research knowledge can be translated to the interest groups beyond the academic community. According to researchers (Head 2015; Reay, Berta & Kohn 2009) decision making and the process behind it should be based on the best available knowledge. Therefore, the concept of evidence-based policy is strongly attached to this study.

There exists strong and widely emerged opinion that empirical knowledge, based on systematic analysis of evidence, could become an effective tool for giving more accurate and comprehensive advice to governmental leaders. Widely supported principle is that public policy making should be based on the best available knowledge that is possible to get from the issue under the scope. The concept of 'evidence-based policy' is developed to open dimensions and tension in the relationship between science and policy making. (Head 2015.) According to Head (2015) the essential meaning and purpose of the concept is to provide objective knowledge from a scientific research. Head (2015) declares that rigorous and objective knowledge should be in the center in political decision-making and the utility of scientific knowledge in the policy making process is one of the core features of evidence-based policy approach.

Business studies recognizes evidence-based policy as an evidence-based management, which is defined as the systematic use of best possible evidence to improve management practice (Reay et al. 2009). The definition goes together with the description of the evidence-based policy. Word 'management' refers more to the execution of the policies rather than creating policies (Cambridge dictionary 2020), but the initial context of 'evidence-based' knowledge in decision making doesn't change. We could also rationalize that evidence-based management is a practical level of evidence-based policy, something that comes part of organizational behavior. (Bryman & Bell 2015, 8.)

The evidence-based management concept is rooted to the medical and health research in the 1990s, where it was developed to decrease the variation in clinical practices

and to make sure that diagnostic and therapeutic procedures become from the best research evidence. Now in the 21st century the evidence-based management is used also in other fields, such as education. Four sources of information can be pointed out contributing evidence-based management: ‘practitioner expertise and judgement’, ‘evidence to the local context’, ‘critical evaluation of the best available research evidence’ and ‘perspectives of those who may be affected by a particular decision’. (Bryman & Bell 2015, 8.)

2.1.1 Aim for more credible social science

The roots of evidence-based policy in social sciences are in the postwar era, after the first and second World War, especially in the 1940's and 1950s in Western countries, where social sciences were under rapid development boosted by Keynesian economics and welfare-oriented social and educational planning. ‘Policy sciences’ were pioneered in United States by Laswell and his colleagues, who are strongly linked to value bases of social progress and democracy. The next decades in North America, Europe and Austrasia social sciences gained significant role in different public programs highlighting social welfare and societal phenomena, such, as education, urban development and race relations. During the 1970s the common opinion among of the leading social scientists was that the research quality level should be raised, which would require improvements in methodology. The results of the participation of social science in public programs had been disappointing. Very often the social sciences were blamed to be too inadequate, which encourage the science community to seek more tools how the make social science more precise, reliable and useful. It was seen that more rigorous, behavioral and experimental methods supported by quantifiable analysis would be in central role. This attempt to produce better evidence, which was cheered by academics, governmental agencies and funding bodies, led to the growing influence of the ‘evidence-based’ policy movement. (Head 2010.)

In the end of 1990s Tony Blair’s government in the UK was developing better approach for policy creation process. They valued evidence-based policy high and saw it as a key element in developing fresh thinking and increasing the policy capability. (Head 2015.) British Academy (2008, 8) emphasized the role of humanities and social sciences in the policy making processes when giving recommendations for the UK government. In the same breath it stated that more anticipatory methods should be engaged to that process in order to respond to the futures development and its uncertainties, and suggests

that developing evidence base of possible scenarios and solutions should be acknowledged in policy making (British Academy 2008).

2.2.1 Need for efficient evidence carrier to reach the cognitive world

Head (2010) argues that the policy decisions in real life are not reflected from empirical-analytical models, but instead from politics and practical judgement. They come from the subjective interpretations of the decision makers, as a result of the interaction of facts, interests, norms and preferred ways of doing things, which very often turns the evidence into something uncertain and open for debate. (Head 2015.)

One of the key factors for evidence adaptation and use is how effectively the research and its findings are communicated. It is also vital that the findings are available for use for the preference groups. This doesn't guarantee the success since very often, despite of the high quality of the research, the impact of the research and its level of further use can be complicated or disappointing. (Head 2015.) Ritter et al. (2007) recognize the same issue and they speak out that evidence is only a component in a complex process of policy-making and "the assumption that the evidence of effectiveness is the only criterion for policy is both naive and untrue." A rigorous analysis might enhance and make a difference, but it is more important how it is articulated through all channels, such as consultation, negotiations with stakeholders, and in evaluating alternatives. There is a need for strategies for improving the interaction between research, policy and professionals practice sector. Especially the role of experts, consultants and advisors is seen significant when engaging the policy processes. (Head 2015.) According to Jones et al. (2009), very often creating 'sticky messages' through developing stories or policy narratives is a key ingredient in policy influence.

According to the British Academy (2008) cross disciplinary co-production in research should be promoted to enhance the communication between the research and its users, and suggests that soft sciences could have a significant role as a facilitator in that process. Lancaster (2014) addresses similar actions in drug policy field and speak about the "up taking" of evidence in policy decision making by using research translation activities where the preference groups would have an important role. Similarly, Bryman and Bell (2015) speak about the knowledge translation as transferring research findings into

the practice when seeking success in evidence-based management. According to Colebatch (2010) in meta level this could mean constructionist perspective where a policy becomes collective puzzling, motivated by a will to identify and solve problems, colored by the different opinions and uncertainty. This would mean critical viewing of "practical workings of what is constructed and how the construction process unfolds" (Gubrium & Holstein 2008, 5). This could create insights about how the evidence becomes relevant in the policy process (Bacchi 2009). It is noticed that at least in the drug policy field the social construction perspective as a policy account shifts the accent or attention from the objective value of the evidence to emphasize the drug problems in a way that makes the policy knowledge valid (Colebatch 2010). Kitson et al. (1998) have drawn a framework for the implementing research into to increase clinical effectiveness. In their model, the successful implementation of research happens in the interplay of evidence, context and facilitation, where the context refers to the environment where the change is ought to take place and the facilitation refers to the all the techniques that is needed to change people minds and attitudes, ways of thinking and working based on the new evidence.

2.1.3 Knowledge translation process

Knowledge translation means a process where knowledge is repacked in order to make it more accessible to potential users. The process requires tailoring the research results to the targeted audience to enhance knowledge sharing and exchange. (Jones et al. 2009.) Most of the literature regarding knowledge translation is found from medical and health research, where the concept very often pops out when the studies are aiming to seek and construct evidence-based practices. The knowledge translation literature is diversified and it includes theories, conceptual frameworks, opinion papers, tools and research studies (Moriah et al. 2016). Graham et al. (2006) aim to clear out the fuzziness around the concept in the article "*Lost in Knowledge Translation: Time for a Map?*" According to Graham et al. (2006) there exists confusion in terminology because there are multiple terms to describe the knowledge translation process or parts of it (Graham et al. 2006). Canadian Foundation for Healthcare improvement (2020) define knowledge translation as:

> "The exchange, synthesis and ethically-sound application of knowledge - within a complex system of interactions among researchers and users - to accelerate the capture of the benefits of research..." (Canadian Foundation for Healthcare improvement 2020.)

The description is very metaconceptual and to get a wider understanding about it, it is necessary to open the concept of synthesis in this knowledge translation's context. According to Canadian Foundation for Healthcare improvement (2020) synthesis is an assessment of expert's conviction or research evidence on a certain issue which aims to help decision-making in the development of policies. The idea is to put the results of a single study in wider context and give the overall body of research evidence. (Canadian Foundation for Healthcare improvement 2020.) There exists also other definition of synthesis, which describes the concept as the systematic review, identification and assessment of quality research by practitioners, policy makers, consumers and other key stakeholders (Graham et al. 2006). Graham et al. (2006, 19) summarizes that knowledge synthesis is "done to make sense of all the relevant knowledge".

Knowledge transfer means turning tacit knowledge to explicit form, where for example ideas and research results transfer between universities, organizations and businesses and wider audience, whereas knowledge utilization refers to actual usage of the research knowledge (Graham et al. 2006). Knowledge exchange, Knowledge transfer and Knowledge utilization are also concepts that are seen as key elements in 'knowledge-to-action' discussions and frameworks, and are often occurring in interactive or causal relation in knowledge translation. Very often the concepts are also confused with each other. Knowledge exchange refers to collaborative problem-solving between the research and decision-making community (Graham et al. 2006). Canadian Foundation for Healthcare improvement (2020) states that effective knowledge exchange is not possible without interaction between decision-makers and researchers. They also declare that results should form in mutual learning through the process of planning, producing and disseminating and also in applying already existing or new research data in decision-making. In this study, knowledge translation process is understood as combination of knowledge synthesis, knowledge exchange, knowledge transfer and knowledge utilization.

2.2 Future workshop

This chapter introduces a futures studies research method, the future workshop, which in this study is used to form an "interface" to the new scientific evidence introduction and a platform for evidence-based policy and for the knowledge synthesis and exchange, the components of knowledge translations process defined in previous chapter.

Workshops are meetings where a group of people debate, analyze and hopefully

comprise solutions, proposals or visions to the focal issue (Nygrén 2019). The original functions of the future workshop was to work as a method, which would help to solve social problems and increase participants' knowledge regarding the future and anticipation skills (Mannermaa 1999, 47).

2.2.2 Part of societal, humane and ecological futurology

"Future belongs to everyone" is the basic statement behind future workshop (Jungk & Müllert 1987, 10). Austrian professor of futures studies, writer and journalist Robert Jungk, is considered as the founding father of future workshop method. He arranged the very first future workshop in Wien in 1950s. Jungk wanted that ordinary people could join the society changing processes that had an impact on their lives. He was aiming to democratization of the future studies (Mannermaa 1999, 47, 48.). The idea was that the participants of the workshop joined the problem solving and produced together ideas and action plans in order to create preferable future (Vidal 2005, 2).

The future workshops were part of new kind of societal, humane and ecological futures studies research and the attempts to democratize the composition of the future is seen as a game changer in future studies. After the second World War the futures research had been directed to serve mainly military and industrial management, and generally futurology was seen nothing else than a promise of a world full of technical achievements. Due to the fluctuation of the student movement in the sixties and the oil crisis in the seventies, the societal orientation in the future studies became stronger and increased the global popularity of the future workshops. (Jungk & Müllert 1987, 16.) Future workshops are also known as a green method since it has been commonly used to solve environment related issues and problems (Vidal 2005, 3) and in this study it is used in this sense as well.

2.2.3 Phases of Jungk's future workshop in a nutshell

The original future workshop is divided into four phases: preparation, critique, fantasy, implementation. In the preparation phase theme, participants, places are selected, and other practical dimensions are taken care of. Successful workshop requires lot of planning and there are plenty of different aspects from the social, psychological and technical point of view that need to be managed. Critique phase starts up the actual workshop. This phase involves topic and problem identification and thorough discussion. It is a phase where

"desperation toward the grievance and faults" is presented, collected and clustered. In the fantasy phase the participants answer to the critique by creating and presenting their own visions, dreams and alternative ideas. The most interesting production is selected within the small groups and refined for suggestions. The fantasy phase includes many different creative thinking techniques, such as brainstorming. In the implementation phase include more realistic approach where the possible barriers for the suggestions, such as legislation and norms, are evaluated. Then the participants imagine how the possible obstacles can be cleared out and create a plan for the action or event. (Jungk & Müllert 1987.) Vidal (2005) brings out also fifth phase called 'follow up'. It involves result reporting to the participants and feedback collection about how the workshop went and what should be considered in other possible tailing workshops.

2.2.4 Literature and methodology

Future workshop is categorized as qualitative, creative and interactive research methods (Popper 2008 65,66), which lean on the brainstorming methods (Mannermaa 1999, 48). The core idea of the method is to involve important stakeholders and reference groups to the research process. The future images or scenarios, that come as a result of the teamwork, are used for viewing the future or as a groundwork for action planning. Although the roots of the workshop method are in societal problem solving, the method is, especially in future studies, used to collect and refine the information that doesn't have necessarily direct influence on participants. The workshop method is seen also as a right tool to work with the complex problems that often gathers different opinions and views around. (Lauttamäki 2014, 2.).

The original future workshop concept has gone through many upgrades during half of the century. The core idea in collective future production has not maybe changed, but the methods used in the workshop vary from the original and the researcher may select from the different workshops models the most suitable one for his research setting. In the beginning of the 21st century academic literature regarding futures workshop was scarce (Vidal 2005), but a decade later several different, partly overlapping, future oriented workshop models have been distinguished from the original. The other workshop models are, for instance, Scenario workshop, Scenario planning workshop, Futures Clinique, Stakeholder workshop, foresight workshop, Backcasting workshop, Collaborative learning CL, Participative Prospective Analysis PPA and Futures Literacy Hybrid Strategic

Scenario. Each workshop model aims to serve different target groups, emphasizing different issues and produce different types of knowledge. The models can be roughly divided into two categories regarding their target audience: the ones that aim to empower individual citizens and the other ones that aim to support decision making and its practitioners. Some of the workshops can be seen as a combination of both. (Nygrén 2019, 32.)

2.2.5 Toward active and efficient workshop working

Some of the upgraded workshop models are especially developed to serve short time constraints. One of those models is called ACTVOD, and parts of it were used in the workshops of AQUADIGM-project. ACTVOD was introduced first time by Ville Lauttamäki (2016) in his article "ACTVOD-futures workshop – a generic structure for a one-day futures workshop" The model was developed by Olli Hietanen, a development director at Finnish Future Research Centre, whose original motive was to develop a workshop structure, which would enable the research of the production of new conceptual and practical knowledge, and the development of the participants' future consciousness. The name ACTVOD is an acronym and comes from the words *actors, customers, transformation processes, obstacles* and *drivers.* The model combines normative and descriptive futures studies, and the methodology of heuristic problem solving, scenario workshops and soft systems. The model is designed particularly for the workshops that are executed within one working day. Generally, longer durations are recommended for the workshops to collect more refined information, but very often resources such as time and money. are limited and demanding longer commitment from the participants is not realistic. (Lauttamäki 2016.)

2.2.6 Working structure in ACTVOD

Complete ACTVOD workshop model includes three working sessions, using different tools from the future methodology. First session includes working with the Futures wheel, which is used in ACTVOD model for brainstorming, exposing and involving participants to the future thinking, record and guide the discussion about the future. Second session focuses on working with Futures table, which is used to collect ideas and views systematically around the topic, whenever it is a question, challenge or problem. Future table is strongly rooted to the "Zwicky Box" tool which is used in morphological analysis in scenario building. The left column of the table contains collected drivers or variables dealing

with the topic and a wide range of different future stages or views are formed for each driver. At the end of the second session futures images of the topic are formed by combining each future state of the variables with other variables' states. In the third session more integrated and holistic future picture is formed by creating one or two scenario paths, usually aiming to follow preferable and avoidable future views. The idea is to get a deeper understanding about what kind of scenario and set of actions would able the future images to become true. The idea is to look backward from the future to the present, so the last session can be seen as a backcasting exercise. The drafts of the scenario form the final results of the workshop. (Lauttamäki 2016.) More descriptive information regarding the working with futures table is given in chapter 2.4. and 3.1.

2.2.7 Challenges of the workshop method

There exist many pitfalls that are very common for participatory research methods. Most of the flagged problems are connected to the research participation and time frame. Interpersonal communication can cause challenges when the participants have different backgrounds and hold different levels of authority, skills, knowledge and abilities. Challenges are brought also the personal characteristics of participants. For instance, the most extroverted participants may run over the most introverts and this way block the useful information. (Stevenson 2002.)

Many of the challenges come from the limited resources, particularly lack of time in short, one day lasting workshops may lead to compromises and taking shortcuts. For instance, Lauttamäki (2016) mentions that in ACTVOD the scenario work is not usually made as thoroughly as recommended by the researchers and due the lack of time shortcuts are often taken. Knapp et al. (2017) reported in their scenario planning workshop evaluation the time constraint to be the biggest challenge. However, in some workshops, like Peter Bishop's introductory scenario workshops with the timeframe of four to six hours, the value of the workshops were less result centric and highlighted the individual learning in scenario making processes (Glenn 2009).

2.3 Scenarios

This chapter introduces scenarios and scenario planning methods, that is ought to work as "carrier" of the evidence and activity of knowledge exchange, and as a creativity tool

for evidence-based policy development. In this study scenario planning could be considered to work as the most important facilitation technique mentioned in the Kitson's et al. (1998) framework that aimed for implementing research into the practice.

It is speculated that the roots of scenario oriented thinking go far back to the 16th Century, where a Spanish Jesuit and theologist Luis de Molina introduced the concept 'futuribilia' or "conditional future contingents' (Malaska & Virtanen 2005), in his most known work, Concordia, which became one of the most scrutinized books in Western intellectual history (Freddoso 2019). The name "scenario" is very often used in dramatic art. In theatre it means outline of the plot, whereas in movies it is seen as a "summary or set of directions for the sequence of action". In future studies scenarios are stated to be "a story with plausible cause and effect links that connects a future condition with the present, while illustrating key decisions, events, and consequences through narrative". (Glenn 2009.) According to Godet (2009) scenarios can be divided into two categories: exploratory and anticipatory. The exploratory scenario focus on constructing the future based in exploration of the trends of the past and present, whereas anticipatory, which is also called normative, aims to construct alternative visions in the range of desired and feared futures.

Futurists have valued scenario method very high because they see that it is more valuable to explore and construct multiple futures rather than trying to build one single image from the unknown. Scenarios are a good tool for producing long-term policies, strategies and plans, and they serve also innovation development and generally evoke discussion and the development in the field they are taking place. Making scenarios can vary from long and complex processes to short workshops. (Glenn 2009.)

2.3.1 Servant in military, business and environment strategy development

According to Glenn (2009), Herman Kahn is known as the founding father of the scenario method and policy analysis in futures research. The method took shape after the 2nd World War and it is seen to have significant connection to military strategy development during the Cold War era particularly during the 50s and 60s. Herman Kahn had a significant role in RAND Corporation, which conducted research for military. Kahn is also known as director of Hudson institute, which emphasized issues, related to US policy, international development and defense. He introduced the scenarios as an escalation ladder in his book "On Escalation: Metaphors and Scenarios".(Glenn 2009.)

In scenarios Khan introduced and emphasized the concept of alternative futures, where the three dimensions of probable, possible and preferable futures are taking place. The strategic role of scenarios in business management as 'scenario planning' became permanent during the 70s and 80s when big corporations like Shell adapted scenarios into their strategic decision making, thanks to Shell's planner Pierre Wack and his colleagues, and gained competitive advantage by anticipating the changes and events in political and economic environment, such as oil crisis and collapse of Soviet Union. (Glenn 2009.) In 1985 Michel Porter defined scenarios as "internally consistent view of what the future might turn out to be - not a forecast, but one possible future outcome", and introduced the key drivers, known as 'Porter's five forces' (Ringland 1998). In the early 90s "The Art of the Long View" by Peter Schwartz was published, and it became an essential part of scenario planning literature. Before the 21st century scenario planning had been widely used and adopted, for instance by airliners, but also smaller companies producing consumer goods (Ringland 1998).

Nowadays, scenario methods are also widely used especially in natural resource management and environmental assessments, where climate change has been recently the most powerful driver. Scenarios are highly valued due to its abilities to seek future uncertainties, involve multiple stakeholders and take a more critical look at the gradual trends that are so often seen linear without surprises. (Knapp et al. 2017.) According to Börjeson et al. (2006) scenarios tend to show also how the goals can be reached when the existing structures prevent required changes Despite of all credit that scenario methods have received there is room for criticism also. For instance, Wright et al. (2013) imply that very often the connection between the method and the real word remains weak and without practical means.

2.3.2 Various ways of using scenarios

There exist various and differing scenario methods, and there seems to be many schools of thoughts regarding the method selection, where the most visible differences come from practices that involve probabilistic and non-probabilistic futures. Scenario practices have evolved and coevolved during the past decades. Vivid development has also created problems in terms of diversity in use, which has led to misunderstanding and methodological chaos. (Martelli 2001.) In the end, very often they all meant to serve the same purpose. For instance, Godet (2009) concludes that the concept of use, whenever we are speaking

about strategic planning, strategic management or strategic perspective approach, is still following the principal definition of planning, introduced in the 1970s and aims "to conceive a desired future as well as practical means of achieving it" (Ackoff 1970, according to Glenn 2009).

The scenario approach differs from historically traditional planning tools in three ways. The first point that differences it from the other approaches is that it is centered on a script or a narrative. Secondly it places uncertainty across rather than within individual modes. It also chunks out complex future possibilities into discrete states that are easier to use, compare and asses. (Schoemaker 1993.) According to Schoemaker (1993), the scenario approach has been welcomed, for instance because of its capability to accept a diversity of views. Schoemaker (1993) found out that a key psychological benefit of scenario planning is based on exploiting one set of biases to counteract others in order to enhance decision making. On the other hand he pointed out that doing scenarios is not straightforward because scenarios require intuition and creativity which are difficult to systemize. (Schoemaker 1993.)

2.3.3 Morphological analysis and Zwicky box

The use of morphological analysis method in scenario building is commonly flagged by futurist and consultants, working in both public and private sectors (Glenn 2009). Morphological analysis is seen to provide a structured method assuring the relevance and consistency in scenario working (Johansen 2018). The roots of morphological analysis are deep in the Ancient Greek. The term 'Morphology' means 'Form' in Greek language and the endeavor for modelling and conceptualizing the term is connected to the ancient Greek and Plalo's 'dialectic method of divisions and collections', generally known as "method of division". During the late medieval period Majorcan monk Ramon Llull wanted to establish a "rational" framework for Christian theology and developed 'Art of Combinations' to work with all of the possible interconnections between analyzed concepts. Llull is considered to pioneer with the combinatorial process development embodied in cross consistency matrix. In the dawn of the Enlightenment a German polymat Gottfried Wilhelm Leibniz, who was inspired by Llull's work, founded mathematical discipline of combinatorics and presented systemized version of morphological analysis known as *analysis and synthesis of combinations*. Leibniz's work defined modern version of morphology as conceptual modelling procedure, but he wanted to take it even further

from the universal context and created relational and holographic approach that focus not only on the interaction of the parts of a system, but also how the parts relate to, making the system whole. (Ritchey & Arciszewski 2018.)

Fritz Zwicky, a professor of astrophysics, brought morphological approach to the future studies. His investigations about extreme phenomena and boundary conditions led him to develop methods for systematic investigations of multi-dimensional problem complexes. (Ritchey & Arciszewski 2018.) Eventually Zwicky developed a generalized form of morphological analyses, "the morphological approach".(Ritchey & Arciszewski 2018.) Zwicky used his General Morphological Analysis (GMA) for purposes from astronomy to forecasting technology and social or political problems (Johansen 2018). More recently, Zwicky's general morphological analysis has been applied by many researchers in the fields of policy analysis and future studies (Ritchey 2013).

Zwicky claimed that the morphological approach is especially applicable to complex problems which concern political motivations, norms and values. Later Horst Rittel contrived the term "wicked problems" to refer such complex, policy driven issues. Wicked problems are usually associated with strong moral, political and professional issues. They are typically ambiguous, open-ended and the issues continuously evolve in interaction with social context. Besides future studies and scenario works, Zwicky's approach has been applied, for instance, to policy analysis, engineering design and design theory, innovations and knowledge management. (Ritchey & Arciszewski 2018.)
Zwicky's GMA is based on iterative process involving cycles of analysis and synthesis. (Ritchey & Arciszewski 2018; Johansen 2018.) The method aims at structuring and identifying all possible aspects and solutions for complex problem spaces which often involve an aspect of human behavior and political choice and therefore are less accessible to quantification or causal modelling.

The most recent application of GMA, the Morphological Box, includes five steps. The first step is the formulation of the problem as exactly as possible. In the next step the problem must be fragmented into a parameter set in which each parameter must be precisely defined. An adequate set of possible states, or values, pertaining to each parameter must also be decided. The third step is the construction of the Morphological Box, which contains all the possible solutions to the problem. The solutions are shapes of configuration where one value is designated to each parameter. The morphological box contains all solutions that can be constructed and therefore the fourth step is to delineate a solution

space by reducing inconsistent or impossible choices. In the last step the remaining solution space is surveyed, and the best solutions are selected. (Johansen 2018.)

GMA can be applied to the problem of creating an all-encompassing typology of scenario classes (Johansen 2018). In this study GMA is applied in future's table which is a part of ACTVOD-model workshop content.

2.3.4 Narratives – turning unknown into resource

Creation of scenario narratives is a complex process and it requires substantial expertise and resources. The relevance of narratives depends on which purpose the scenarios are meant to serve in an organization. Even though there are different opinions towards scenario planning and techniques, there seems to be a wide agreement about the significant role of storytelling in building scenarios. As Michael Burnam-Fink says: "scenarios are stories". (Burnam-Fink 2015.)

Storytelling can serve many purposes in theories of scenario planning but in all cases, it can be seen as a method for turning the unknown into a resource of planning. Burnam-Fink also points out that a common problem in the use of scenarios is how to share the insights generated in workshops with a broader community. This problem is also linked to the concept of trust. It seems that in scenario thinking the future views don't lack accuracy or the domain of truth. Instead those who are making plans must trust that the scenarios won't lead them into mistakes. A chaotic or unclear method can easily destroy the credibility and trust. Even though the participants of the workshop are aware of all the dimensions of their personal experience and thoughts, for an average reader of the scenario the credibility of scenario lies in the way the scenario is presented. (Burnam-Fink 2015.)

The most important argument according to Burnam-Fink (2015) is that trust in scenarios is linked to their narrative form. For example, Pierre Wack, a planner of Shell, had to create a new way to represent his scenario because he couldn't convince Shell's management of the possibility of energy crisis. When Wack managed to link his scenario into a narrative form where he vividly helped the managers to imagine the results of the possible crises, his scenario was trusted. It is often claimed that because of that trust, only Shell was emotionally prepared for the change in energy market. With his new type of scenario Pierre Wack was a pioneer of using narratives as a tool to question people's assumptions about how the world works so they could see the world more clearly.

(Schwartz 1991,8.) One of the main purposes of scenarios is that they must transport the reader from their existing worldview of short-term concerns to a broader conception of the future. And as Burnam-Fink states: "narrative is often the vehicle by which this journey often occurs". (Burnam-Fink 2015.)

2.4 Conceptual framework scheme

In this chapter is presented the scheme of the conceptual framework of this study. The scheme is presented below in Figure 1. The aim of the scheme is to embody and show together the theoretical components of the framework of this study. It captures the theoretical view about what this study understand that happened in this workshop case. In the Evidence-based future workshop setting the workshop is ought to work as a "link" or "carrier" between the research evidence and policy makers, who are in this research setting an expert group from business sector, and work as an intermediary for knowledge translations process and platform for evidence-based policy approach.

There is not much left from the traditional Jungk's future workshop method in this model but the original four phases can be seen, even though the practices are not the same. Although, there seems to be a general aspiration for modelling around the workshop concept, as we saw in chapter 2.2, in this study it is more about naming this particular setting just to understand it better and highlight its epistemological curiosity as a carrier of highly objective scientific knowledge, rather than proposing new model for the workshop execution. By doing so, this study is perhaps ironically continuing the unnecessary reproduction of terminology, but it can be seen more as a virtue than a curse in future studies. In this research the future workshop is a combination of ACTVOD and Scenario workshop models. and the study is not producing any new innovations regarding the futures studies' methods. Since ACTVOD model was only partly applied to the workshop with its session two and three, this study considers it more as a scenario development sequence of the workshop.

In Figure 1 the top arrows and the squares describe the original phases of the future workshop and present the content of the workshop. The scenario sequence of the workshop is shown in two arrows below, indicating that fantasy phase and implementation phases cover the session two and three from ACTVOD model. The circle on the right describes the outcome of the workshop and how it succeeded as a platform of evidence-

based policy. The green arrows demonstrate the knowledge translation activities throughout the workshop setting. Each green arrow includes activity, taking place in certain phase or phases in the workshop. The locations of the green arrows are defined depending on how the original definitions of knowledge translation activities (introduced in chapter 2.1) match with the workshop activities. The knowledge transfer and utilizations occur inside of the outcome circle, which means that the completeness or incompleteness of the research translation process is revealed in the findings of this study. In the next chapter is described more thoroughly how the workshop setting worked in practice.

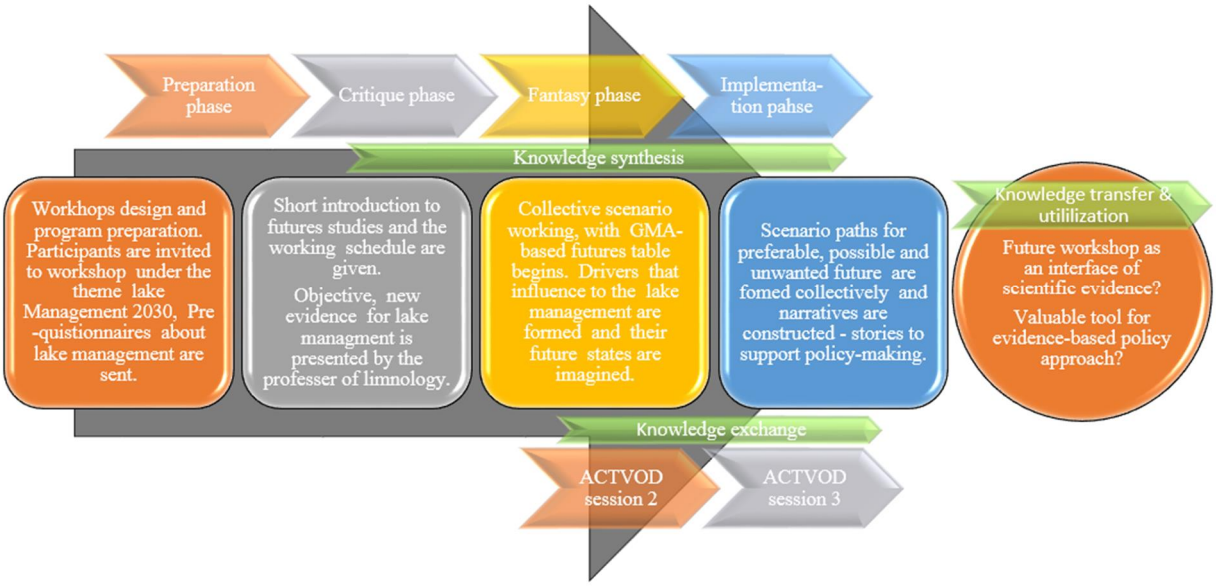

Figure 1 Evidence-based future workshop setting and knowledge translation process

3 MATERIAL AND METHODS

3.1 The workshop

3.1.1 Preparation phase

Approximately two months before the workshops, eight Finnish aquatic environment-related companies were contacted by calling. Eight people in eight different companies were invited to the workshop. After calling and asking the companies to participate in the workshop, the companies were sent an email which included more detailed information regarding the workshop schedule and content. After receiving the information, companies were able to decide whether they want to participate and who would be the most appropriate participant from their company.

All in all, six people from six companies from the private sector decided to participate in the workshop. Four of the companies were consulting companies which work with lake restoration and management planning and two of the companies were engineering and equipment providers in water and lake management. Couple of days before the workshop the participants received a questionnaire regarding lake management, which they returned to the workshop. Workshop was organized in Helsinki, 17th of November 2015.

3.1.2 Critique phase

Workshop started with the general introductory presentations of future studies and Future Research Centre presented by a master's degree student and professor of futures research. After the introduction, professor of limnology presented the results of his and his group's field research in lake Vesijärvi. The research findings demonstrated that the role of aeration as a lake restoration method should not be as central as it commonly is and, in some cases, it can have a negative effect on the water ecosystem in lakes (Horppila et al. 2015). This kind of research had not been implemented or published earlier.

After the presentations, participants had an opportunity to ask questions and discuss about the research. Then the working method of future workshop was introduced, and GMA-based futures table was shown to the participants. In the futures table were presented different themes and drivers which were foreseen to have an impact on the

future of lake management by 2030. Before the actual discussion started, a small visualization practice was carried out with the participants aiming for more relaxed and creative work.

3.1.3 Fantasy and implementation phase

The workshop continued with ACTVOD model's session two and three, and participants initiated to work with the futures table that had a headline "Lake management and restoration 2030", and for each theme and driver the participants imagined different future states. Some of the themes were predetermined in advance by the researchers to enhance the working with the futures table and framing the topic, but participants had the possibility to add more themes to the table if they considered it necessary. The instruction given was to suggest ideas without criticism and the working situation tended to follow Jungk's and Müllert's (1987) brainstorming phase. The ideas were written down to Excel sheet which was shown to all participants. The bookkeeper or facilitator did not actively take part in conversation, but his role was to guide the conversation and to make sure that all the themes were discussed and facilitate the interaction between the participants.

In the second phase of the workshop participants discussed if the imagined future states of the themes had desirable, unwanted, or probable future view regarding the lakes and lake management. All states of the themes were coded, row by row, by circulating them with a color representing a coherent whole. Red color was used when the future stage was seen to form a threat, blue was chosen for preferable future and black for the most probable future. This way each set of circulated future states formed milestones for scenario paths for the desirable, unwanted or probable future. The futures table was the primary working tool in the workshop. It is presented in the attachments (Attachment 1). The final stage of ACTVOD model included formation of the scenario paths. The idea was to write down what should or should not be done, in order to make the circulated future states become true and establish logic and causality behind them. Due the lack of time the participants formed the scenario paths only for the desirable and unwanted futures and the probable scenario path was left out. The logic behind the desirable future scenarios were established as follows:

Desirable future:

- Taking research findings into the practice and bringing findings in bigger scale.
- Reducing bureaucracy so that actually efficient methods can be taken into the practice.
- Increasing the communication between different interest groups and transparency between the actors.
- Coordination and uniformity of the restoration necessity between authorities, community efforts don't last long.
- Directing fishing fees into the lake restoration instead of fish cultivation as usually.
- Establishing water protection funds, for example 2% of fishing fees.

Unwanted future:

- Indecisiveness of politicians and authorities and inability to approve and use new innovations, new efficient innovations are not noticed.
- Environment consciousness disappears. The responsibility is carried by small group of people. Ecological values are not shown in management of environmental issues.

3.2 Theme interview

Six months after the future workshop, participants were contacted again. The schedule for a theme interview was agreed by phone. All the six participants were interviewed face to face except for one interview which was held by Skype. The interviews lasted from thirty minutes to one hour. Before the interview started the interviewees were asked to fill up the same questionnaire that they did before the workshop. All interviews were recorded but two of the records were damaged and therefore were not suitable for analysis in this research. All remaining four recordings were transcribed.

The interviews were theme interviews with open questions. The questions were organized under four themes. A list of themes and example questions are shown below.

- Future studies in general

  - Did you have any previous experiences in future studies or future oriented rehearsals? What kind?
  - How did you experience the future workshop?
  - What do you remember particularly from the workshop?
  - What was good or bad in the workshop?
- Future workshop as a forum of representing new evidence
  - How did you experience the workshop as a channel for representing new scientific evidence?
  - Did the future perspective help you to understand and assimilate the meaning and purpose of the new evidence?
  - Did the future perspective help you to reflect impacts of the research results on the environment in wider perspective?
  - Do you think that the future workshop brought new views to the lake management?
  - How did the future workshop differ from ordinary meeting or conference?
  - Did the form of the workshop shape the content of the conversations?
  - Did the future workshop affect your opinion towards aeration? How?
  - Did the workshop change your attitude towards something else regarding lake management?
  - Have the subjects, scenarios or thoughts presented in the future workshop aroused in conversations at work after the workshop? If so, do you remember any of the topics?
  - Have the conversations been unofficial or official and have they led to the practice in any level?
  - Has there been any direct actions or instructions regarding the aeration at your workplace?
  - How do you see the position of aeration in lake management in 2030? Is there going to be any changes to current practices or is everything going to be the same?

- Participant's knowledge acquisition
  - Have you read the future workshop report which was sent earlier? What did you think about it?

- How do you gather information about lake and management? For example do you participate conferences, read professional literature, academic research reports or journals? Do you read reports published by ministry or Finnish Environment Institute (SYKE)? Do you get advised by your colleagues? Or do you acquire information in other ways?
- Would you take part in similar future workshop if there is a change to do so in the future?

- Future workshop's future
  - In what kind of situations future workshops would be suitable in your opinion? Or which not?
  - If new scientific evidence is gathered, would future workshop be a propriate channel to represent the evidence?
  - Does future workshop only create an illusion of participation or does it also support genuine strategic decision-making?

3.3 Directed content analysis

Content analysis is widely used in qualitative research. The purpose of content analysis is to find and interpret meaning of textual data. Content analysis is not a single method, but it can be divided in three approaches: conventional, directed, or summative. The approaches are different in origins of codes, coding schemes and threats to trustworthiness. (Hsieh & Shannon 2005.)

Conventional content analysis is a useful approach to describe phenomena that are not often explained by literature. Coding schemes rise from the text and words rather than predetermined structures. Categories and names of the categories stream from the data. Relevant theories or previous studies are addressed in the discussion section of the study. Directed content analysis might work when there is existing theory or previous studies about phenomena that would benefit a further description. The idea of directed content analysis is to validate or extend already existing theory or theoretical framework. The data coding and its possible interactions are reflected from the conceptual framework of the research. It is guided by theory and a more structured process than for example conventional content analysis. (Hsieh & Shannon 2005.) Potter and Levine-Donnerstein

(1999) go through the different roles of theory in content analysis and talk about the deductive role that requires the use of theory when designing the coding scheme. The third of Hsieh's and Shannon's approaches is the summative content analysis which aims to identify, quantify and sum up for instance frequencies of latent patterns, such as use of similar words. (Hsieh & Shannon 2005.)

In this study directed content approach was used for data analysis because the aim of the study was to investigate how the collected data can be reflected to already existing theory of future workshop's platform. According to Hsieh and Shannon (2005), in directed content analysis the key concepts of the theory are defined and used as a guideline when constructing categories for coding. There are two strategies for coding the data. If the aim is to identify and categorize all occurrences of a phenomenon it is recommended to highlight from the transcript all the issues that represent the phenomenon and then continue the analysis by coding the highlighted texts with predetermined codes set by the theory. The text that doesn't fit under the coding scheme gets a new code. In the second strategy the coding according to the predetermined codes starts right away and the data that doesn't fit the categories will be analyzed later and new or subcategories are formed if necessary. (Hsieh & Shannon 2005.)

Directed content analysis produces supportive and non-supportive evidence for a theory, which are projected to the findings. The supportive evidence behind the coding are often presented as descriptive examples. The strength of the directed content analysis is that it can extend and enrich the theory. However, it may have some inherent limitations and it can decrease the objectivity of analysis and guide the researcher to see rather supportive than non-supportive evidence for his or her theory. (Hsieh & Shannon 2005.)

The transcribed interviews of this study were processed in Nvivo software. The categories for coding and the logic behind the coding scheme were adapted from the theoretical framework scheme and the coding strategy followed the second strategy of Hsieh and Shannon (2005). There were four main categories and six sub-categories. Interviewees' transcribed answers were moved under each category folder called "nodes" in Nvivo, the data that didn't fit into any predetermined category were put under own category folder saying "without definition" for possible later use. The main categories were: 1. future workshop as interface of new evidence 2. general attitudes toward aeriation 3. interviewees' experiences of the future workshop and 4. not yet classified. Under the first main category there were three sub-categories which were: impacts of evidence after the workshop, knowledge acquisition or update and interviewee's position in supply chain. The

last two sub-categories aimed to reveal background information behind possible knowledge transfer. Under the second main category there was one sub-category: opinion about lake restoration methods before and after the workshop. Third category's sub-categories were: earlier experiences from future studies or future methods and future workshop's group cohesion and its possible challenges.

In the end, the original categories turned out inoperative for various reasons. For example, the sub-category 'knowledge acquisition or update' turned out irrelevant because all the interviewees' stated that they don't have resources to update their knowledge. It also seemed like some of the categories were not broad enough and some information which seemed relevant to this study didn't fit to any category. For example, the categories that aimed to find out information about interviewees' background were not comprehensive enough because the interviewees' backgrounds varied a lot. It would have required more categories to include all background information and then there would have not been enough material under the categories because of the small amount of interviewees. On the other hand, by adding too many categories, the "nodes" would have pointed out information which is so detailed that it would have been irrelevant to the purpose of this study.

In order to prevent the overall picture of the research material to became too fragmented, the original categories were modified to four main categories which aimed to reflect the theoretical framework scheme presented in chapter 2.4. The coding categories were formed broad so that the individual backgrounds and experiences of the interviewees would fit to the categories and the variation of the interviewees' answers would certainly remain. The final coding categories were:

- Future workshop as a platform for new scientific evidence
- Critique phase and evidence introduction
- Fantasy and implementation phases: Impact of the workshop on participants work, working community and services
- Without definition

After the four main categories were decided, the transcribed interviews were read through carefully several times. Then it had to be decided in which category the content belongs to. Because there were only four interviewees, it turned out unnecessary to use

Nvivo software. Instead, the sentences were highlighted with different colors which represented each category. The category names formed headlines for the finding section, although they were refined a little bit to implement even deeper connection to the theory.

4 FINDINGS

4.1 Workshop in general and what factors influenced the experience

The aim of the study was to explore how the future workshop as an event suited for presenting new scientific knowledge. To get an overall picture about it, interviewees' opinions about the participation experience were heard. The participation for the event as future workshops and scenario planning was a new experience all thought some participants, especially those who worked in consultancy field, had been involved in future oriented decision making during their career. So, if this workshop was considered quite new kind of event in futures studies, it was also that for the participants.

The second question of the interview was how the interviewees experienced the workshop. Two of the interviewees felt that the workshop was clearly a positive experience. For example, Interviewee 1 thought that the workshop brought a new, fresh angle to the topic and Interviewee 2 described the workshop very interesting. Interviewee 4 told that he (in this study all interviewees are called "he" despite of the gender) doesn't remember the feelings during the workshop anymore, but later during the interview, it seemed like the experience was rather good than bad.

Interviewee 3 feelings were contradictory. On the other hand, he thought that the experience was positive, and it is very important to organize such event where a group of experts from different fields gather. However, he felt quite strongly that he couldn't share his knowledge to the other participants as much as he would have wanted, and he highlighted that feeling four times during the first eight minutes of the interview:

> "Eniten jäi harmittamaan se että, mä olisin kertonu laajemmin näistä meidän viisauksista – Meil on paljon sellasta, tietoa mitä mun mielestä ei kellään muulla ole"
>
> ("The most disturbing thing was that I would have wanted to tell more about our wisdoms – In my opinion we have a lot of knowledge that no one else has")

A little bit later during the interview the Interviewee 3 told that:

> "mulle jäi tavattoman positiivinen kuva tästä koko jutusta [tulevaisuusverstaasta]. Et hei täähän on hyvä juttu – tai no se negatiivinen juttu mikä jäi niin musta tuntu et mulla olis ollu enemmän kerrottavaa"
>
> ("I was left with a very positive feeling about this whole thing [future workshop]. Like hey, this is great – or well the negative thing was that I felt that I would have had more to tell")

Any other of the interviewees did not feel that they couldn't share their own ideas well enough. As a matter of fact, Interviewee 4 felt quite the opposite and in his opinion, everyone was able to speak out their own opinion. Also, Interviewee 1 mentioned that the conversation was good, and all the interviewees were able to speak out even they weren't acquaintances. Except for Interviewee 3 all the other interviewees very grateful that the facilitators led the conversation. By doing so, they made sure that everyone can have their own turn during the conversation and the focus did not slip away from the topic. Especially Interviewee 1 and 4 felt that in some point the group cohesion was in danger to suffer due one of the participant's enthusiasm for lobbying too much own ideas but the facilitators in the workshop were able to control those moments.

Even though the content of the conversation was experienced quite good and diverse, Interviewee 2 mentioned that the workshop could have been more profound in some ways:

> "Ehkä, se (tulevaisuusverstaan kesto) ois voinu olla jotenkin pitempiki, tavallaan perusteellisempi osittain"
>
> ("Maybe it [duration of the workshop] could have been somehow longer, in some way partly more thorough")

Three of the interviewees mentioned that the group of people invited to the workshop was very suitable for this kind of process. Particularly the amount of people was a positive factor for two interviewees. Interviewee 4 also mentioned that the intimacy of the event compared to big seminars also created some pressure but in a good way:

> "se yllätti et oli vähän porukkaa, et se olikin niin semmonen intiimi tapahtuma. Mut ei siis huonolla tavalla vaan silleen et oli ihan kiva - - ensiks oli vähän semmonen olo vähän et onkohan mul nyt hirveesti annettavaa"
>
> ("it surprised me that there were so few people and it was such an intimate event. But the surprise was not bad rather I felt like this is kind of nice - - at first I felt a little bit like do I have a lot to offer")

All interviewees stated that they would gladly join similar event if, something their job related, new research would be introduced. Interviewee 1 pointed out that in big seminars the information can be spread much wider because they enable a much larger number of participants. On the other hand, the workshop can enable a deeper understanding of the topic. He said that:

> "tieto voi mennä ihan erilailla perille [verstaassa kuin seminaarissa] - - kun sä päivän pureudut oikeesti siihen aiheeseen"

("the knowledge can strike home much better [in workshop comparing to a seminar] - - when you put your mind to the topic for the whole day")

All the interviewees thought that the it is very important to select the participants very carefully. For example, Interviewees 3 and 4 mentioned that especially experts of different fields are important in this kind of method and they could be the key of a productive conversation.

Table 1 **Summary of participants' experiences in general**

Topic	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4
Previous experiences in future studies or future oriented rehearsals	Had participated before some future oriented working but not like this workshop	None	None	None
Overall picture of the Workhop	Positive	Positive	Contradictory	Didn't recall at first but later described it rather good than bad
Facilitators' significance	Controlled that everyone had their turn and one participant didn't lobby his own product	Ensured that the conversation stayed in topic	Felt that didn't have enough opportunities to tell about his own knowledge	Made sure that everyone can speak out their opinion
The importance of other participants	The small amount of people was good for this kind of working.	Small group made the interaction easier	Especially important to have people from different fields	Especially important to have real experts of their own field

4.2 Critique phase and evidence introduction

The critique phase had exceptional role in the workshops since it offered new, even contradictory information regarding the lake management and lake restoration method, aeration, dealing with an established paradigm in limnology. Introducing such a strong scientific evidence as a basis for future oriented group working was unique. From the evidence-

based policy approach perspective the critique phase of the workshop had an essential meaning. It was the point where knowledge translation process was ought to begin and interaction between research and its users, synthesis of knowledge, starts to form. How the participants experienced the critique phase and what kind of attitudes were taken regarding the evidence were find out to understand the factors weakening or strengthening the born of knowledge synthesis.

The interviews revealed that the topic of the research findings was not completely new for the participants. It was already believed among the participants that aeration would not always be the most adequate method. For instance, two interviewees had got familiar with the paradigm of aeration during their limnology studies in the past. For example, Interviewee 4 was also critical towards aeration before the workshop and he had quite recently argued against aeration in a project he was working on. Also, Interviewee 3 told that even before the workshop he thought that aeration is not effective because the effect is in such a small area.

Like Interviewee 3 and 4, Interviewee 1 and 2 were also already familiar with some evidence revealing that aeration is not always effective. At the time of the interview they thought that aeration is an adequate method in some cases but not always. For example, Interviewee 1 highlighted the complexity of the issue:

> "ei oo yks ainoo vaihtoehto että hapetus on oikeen tai väärin. Vaan et on järvi jolle voi sopia hapetus tai sille voi sopia, joku toinen kunnostusmenetelmä. Koska jokainen järvi on kuitenki yksilö - - niin, ei voi tutkailla mun mielestä vaan yhtä kunnostusmenetelmää."
>
> ("It's impossible to say that aeration is right or wrong. There might be a lake where aeration works or maybe it would benefit from some other restoration method. Because every lake is an individual - - and that's why in my opinion you cannot observe the issue from only one method's point of view")

Interviewee 2 thought that it is always important to hear about new research results, but he did not either accept completely the critique toward aeration since he saw that there had been cases where the aeration had brought good results. After the interview the interviewee sent some written material to support his opinion.

Among all the participants, the general belief of aeration as an ineffective method at least in some cases, was reinforced by the presentation. However, it would be too exaggerated to say that completely new research data was experienced as a new scientific discovery or shocking new information.

Two of the interviewees, Interviewee 1 and 4, brought up that it is not insignificant who represents the new evidence. They both knew the researcher before and for them it

increased the importance and validity of the evidence. For example, interviewee 4 emphasized the trustworthiness and reliability of the researcher in the evidence communication and stated:

> "No siis mullehan se [uuden tutkimustulosten esittäminen tulevaisuusverstaassa] toimi kun mä tunnen Jukan ja tiedän, luotan häneen. Että hän on niin pätevä ja näin"
>
> ("It worked [the introduction of the new scientific evidence in the future workshop] with me because I know Jukka and trust him and know that he is competent and so on")

Interviewee 4 stated that participant's background is connected to how the presentation affected on their opinion. Also, Interviewee1 brought out that the representation would have left the general view quite narrow if the topic wouldn't be so familiar for him.
In the end, aeration was not in central role during the next phases of the workshop. Interviewee 1 summarized the impact of the presentation like this:

> "En ehkä osaa eritellä nyt sen esitelmän vaikutusta siihen kokonaisuuteen".
> ("I cannot perhaps separate how the presentation affected to the big picture".)

Interviewee 1 also stated that the presentation did not lead him to different recommendations on the projects he was working on. However, he did tell that he had contacted professor Horppila regarding some work-related projects he had after the workshop and it could be interpreted that maybe the workshop did effect on the decision to consult him. However, the aeration topic was relevant to the interviewee during the time of the workshop and more attention toward the method was paid due the coincidence timing. Although, the interviewee couldn't separate the impact of the presentation, he considered the research results as a fact and thought that it was good to have fact-based information to support the group working phases.

Interviewee 4 thought that the impact of the presentation was quite minimal in big questions like climate change and thus did not have a significant role in the big picture regarding the future of the lakes, but it had value when considering a single lake management method.

> "autto siihen et se kyseenalaisti vähän sitä hapetusasiaa"
>
> ("helped to questioning the aeration issue")

Interviewee 4 also told that due to the presentation he will definitely pay more attention in research about aeration and it made him more skeptical towards aeration.

Table 2 **Summary of participants' opinions toward evidence's impact**

Topic	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4
Workshop as a channel for representing new scientific evidence	It worked because the topic was very familiar – wished a wider view to the topic	It was OK	It worked well	It worked because the topic and the person representing it were familiar – would have wanted more alternative views to the topic
Opinions towards aeration before and after the workshop	Reinforced attitude: aeration is suitable only in some, rare cases	Accepting, but defending attitude: aeration works in some cases very well	Reinforced critical attitude towards aeration	Reinforced critical attitude towards aeration

4.3 Fantasy and implementation phases

Fantasy and implementation phases of the workshop included the actual group working with the GMA-based futures table according to the ACTVOD model's sessions two and three, starting from producing drivers and future images and ending to the scenario production. From the knowledge translation process perspective these phases were important for the knowledge exchange activity that according to Graham et al. (2006) involves collaborative problem solving, and according to Canadian Foundation for Healthcare improvement (2020) happens through the process of planning and producing and applying the new evidence into that process.

This chapter aims to find out the interviewees' opinion about the workshop as a channel for communication of new research findings and as a platform for evidence-based working. As part of that, it is described how participants thought that the introduction's message effected the fantasy and implementation phases. Also, the factors that might have affected interviewees' opinions are presented.

All interviewees considered that the workshop was successful method to tackle the theme of lake management and the evidence. All interviewees also thought that the introduction was in some ways useful. For example, Interviewee 2 brought out that the introduction:

"herätti [minut] suhtautumaan vähän kriittisesti [hapetusta kohtaan].

(”provoked [me] to critical thinking [toward aeration]”).

On the other hand, Interviewee 4 thought that the introduction did not prepare the participants to think the phenomena (climate change) pervasively because the topic of the introduction was quite unilateral and the professor concentrated purely on limnological facts and measurements. Interviewee 1 thought that the introductions in the beginning of the workshop and the future focus enabled constructive discussion around the evidence and help to concentrate on the main theme of the workshop. He described that:

“se viritti sinne taajuudelle kyllä”

(“it tuned on to the right frequency”)

All the interviewees considered the fantasy and implementation phase of the workshop as successful working method. Interviewee 2 and 3 flagged the good interaction of the participants when producing knowledge. Interviewee 2 said:

”tämmösessä pienessä, piirissä on helpompi kysellä ja - - keskustella siitä [järvien hoidosta]”

(”in this kind of small group it is easier to present questions and discuss about it [lake management])

Interviewee 3 concluded:

”täs [tulevaisuusverstaassa] päästiin semmosiin, yhteisiin aitoihin keskusteluihin, - - siinä [keskustelussa] kaikille avartui varmaan vähän nää omat käsitykset.- - siinä [tulevaisuusverstaassa] päästiin oikein semmosiin, perustavaa laatua oleviin syvällisiin pohdintoihin. Että niin ku palapelikin rakentuu pala kerrallaan niin mun mielestä me päästiin pienillä paloilla, vähän eteenpäin sitä että jonain päivänä järvet olis kunnossa.”

(”in this [future workshop] we reached the shared, genuine conversations - - it [conversation] broaden everyone’s own understanding - - it [future workshop] took us to thorough and profound conversations. Like a puzzle that is built piece by piece, in my opinion we constructed little pieces that brought us closer to the goal that one day lakes would be in shape.”

Interviewee 1 and 4 emphasized the suitability and efficiency of the working method. The Interviewee 1 compared the workshop working to other methods he knew and described:

”mä tykkäsin että sielt [keskusteluista] nous myös semmosia ajatuksia mitä ei ois välttämättä jos vaan listais tai keräis [ajatuksia] jotakin niinku jollaki toisella menetelmällä niin ei välttämät nousis - - niinku kytköksiä et niin joo et tälleekin voi funtsia. ”

(” I saw that it [the conversations] brought up also thoughs that would have not be risen only by listing or collecting [ideas] with some other method—like connections that hey you can also think it this away.”)

Interviewee 4 mentioned the efficiency of the method by stating:

> ”kun yritetään lyhyessä ajassa saada tavallaan, aika isoihin asioihin vastauksia, ainakin jotain suuntaa antavia [ideoita] niin kyl tommonen muoto on ihan hyvä.”
>
> (”when trying to reach conclusions or at least some directional [ideas] to rather big questions this kind of form is quite good.

Interviewee 1 remembered especially the scenario forming and backcasting thinking, and consider it inspiring:

> “se päivä kokonaisuutena jotaki kyllä naksautti päässä sillä tavalla et tajus et näinkin näitä asioita voi ajatella. Ja voidaan ajatella sielt tulevaisuudest taaksepäin nykyhetkeen vaikka nyt yleensä ajatellaan tästä tulevaisuuteen. ”
>
> (“The day itself clicked something on in a head and make to see that there can be an alternative approach for things.”)

Table 3 **Summary of participants' experiences about the working stages**

Topic	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4
Fantasy and implementation phases suitability to tackle the theme of lake management and new evidence	Good	Good	Good	Good
Introduction’s effect on conversations during implementation and fantasy phases	The introduction tuned the participants to the right frequency	It probably brought some new angle and deeper thinking to the conversation but it’s hard to say. It did not bring any strong fresh ideas or thoughts.	The introduction left a positive picture, but it did not affect the conversations very much	It provoked to critical thinking towards aeration, but did not prepare the participants to think the phenomena pervasively because the topic of the introduction was so narrow
Fantasy and implementation phase as a platform for communication and sharing ideas	The structure helped to find connections or links between phenomena and made sure that no-one can lead the conversation too far away from the topic	The structure of the event helped the conversation to stay focused. The conversation proceeded logically according to the plan	The structure led the participants to genuine conversation and directed to proceed step by step towards the conclusion, but it also left too narrow space for	Efficient, but in some ways, it restricted the conversations too much or led them to certain directions. On the other hand, it made sure that

	sharing own knowledge	everyone took part in the conversation

4.3 Impact of the workshop on participants' work, working community and services

The interviews aimed to find out whether the future workshop and the new evidence presented in the workshop had any influence on participants work, working community or services they provide. Was the knowledge constructed in the workshop communicated to anyone in the first place?

Interviewee 3 stated that he had told about the workshops to the people he had met in work related matters. Also, Interviewee 1 had discussed about the workshop. However, he could not specify any particular moments, meetings etc. where he would have discussed about the subjects aroused in future workshops. Instead Interviewee 1 told that he has had mutual conversation about the future workshop for example at lunch or coffee breaks. Interviewee 1 described his work very independent and that is why, in his opinion, the most important benefit was what happened in one's own thoughts. Interviewee 1 described that it changed the way of thinking, and especially the scenario working as a method of problem solving had made an impression. He said:

> "arvokkain juttu [tulevaisuustyöskentelyssä] oli ehkä se että - - et näinkin [tulevaisuuslähtöisesti] näitä asioita voi ajatella. Että, välittyy se sit suoraan johonki raporttiin tai ei niin se on silti, musta arvokast "
>
> ("The most valuable thing [in the future working]was that - - one could have this kind of approach for thinking about these matters. And does it show directly in some report or not still makes it valuable.")

Interviewee 1 did not have any specific examples of future workshop's influence and the workshop provided mostly new food of thought.

Also Interviewee 2 told that most of the knowledge gained in the workshop stayed with him.

> "kyllä se [tulevaisuusverstaassa saatu tieto] on tainnu jäädä omaks aarteeks"
>
> ("Yes, it [the knowledge received during the workshop] has perhaps remained my own treasure")

In his case the reason was that he was the only one with the same field and expertise at work. In personal level the interviewee felt that in the future he would evaluate the aeration method more critically than before in the projects where aeration method would be in consideration.

Interviewee 1 considered that planned and organized sharing of the knowledge gained in future workshops or other kinds of seminars is difficult. He described the problem like this:

> "Et miten nyt sitten muutki sais kiinni siitä ajatuksesta, mihin mun siihen yhteen kiinnisaamiseen meni koko päivä - - niin miten mä saisin sen, vaikka ryhmäpalaverissa viestitettyä muutamassa minuutissa."
>
> ("How would the others catch the idea when it took me the whole day to catch it - - how could I explain it in for example in group meeting in a couple of minutes.")

Interviewee 4 felt that he was alone with the topic at his office and unable to share the workshop day in mutual conversations. However, after the workshop he had sent the information regarding the workshop forward to the company's branch office, that focuses more on the aquatic projects. He had pointed out that the aeration should receive more critical attention in decision making in the future. Interviewee 4 had also sent professor Horppila's articles to the a lake association regarding the ongoing work project related follow-up meeting and advised them to get familiar with the topic .

> "laitoin et seuraavan kerran kun teette jotain, hapettamiseen esimerkiks liittyen niin lukekaa ehdottomasti nää Horppilan [julkaisut] - - siel on ollu tätä kritiikkiä kans ilmassa [hapetusta kohtaan]."
>
> ("I wrote that next time when you do something, for example aeration related, read absolutely these Horppila's [research papers] - - there has been [already in the past] some critique [toward aeration] also in the air.")

Table 4 **Summary of the impacts of the workshop on participants' work**

Topic	**Interviewee 1**	**Interviewee 2**	**Interviewee 3**	**Interviewee 4**
Did the workshop lead to any kind of communication afterwards	Yes	No	Yes	Yes
What kind of discussions	Informal conversation about the future workshop	–	Work related discussions with a lot of people	Sent information regarding the workshop to a branch office
Reasons	Work is very independent and that's why there were no formal channels to discuss.	He is the only worker with the same field and expertise so	He has a lot of different kind of contacts and wanted to share his experience because he	The topic did not concern anyone at his office so he couldn't share the ideas in

	there are no colleagues to discuss with.	thought it is so important to hold such events and he was very flattered to be involved.	mutual conversations. However, the branch office concentrates on aquatic projects.

4.4 Knowledge translation process

Knowledge translation activities were called for in making better evidence-based policy (see chapter 2.2.1). In this study the knowledge translation process is divided in three activities: synthesis, knowledge exchange and knowledge transfer and utilization. It is highlighted by green arrows in Figure 1. The knowledge translation process is necessary when pursuing to evidence-based decision-making and actions. So that the future workshop could be considered to work as a platform in the evidence-based policy making, it must implement the knowledge translation process and be able to recognize and measure it. The table 5 below collects the descriptions of mental processes, which can be interpreted somewhat semantic values of knowledge translation during and after the future workshop.

Table 5 **Collection of descriptive measures of knowledge translation process**

Synthesis	"The day itself clicked something on in the head" "it tuned in to the right frequency" "help to questioning the aeration issue" "the knowledge can strike home much better [in workshop comparing to a seminar] - - when you put your mind to the topic for the whole day"
Knowledge exchange	"we reached the shared, genuine conversations" "it [future workshop] took us to thorough and profound conversations" "in this kind of small group it is easier to present questions and discuss about it [lake management]"
Knowledge transfer & utilization	"perhaps it remained my own treasure", "How would the others catch the idea when it took me the whole day to catch it" I wrote that next time when you do something…"

5 DISCUSSION

5.1 Participants' experiences

This research was perceived through three research questions. In the first question the aim was to acknowledge, what factors should be considered important when future workshop is used as an interface for presenting new scientific evidence and as a platform for evidence-based policy. Previous studies have shown what kind of barriers might prevent the best possible knowledge, evidence, to reach the decision and policy making, and seems that similar difficulties might appear when the knowledge is brought to the future workshop environment. For example, according to Head (2015) the use of evidence is often limited by democratic debate and stakeholder lobbying. The will to promote one's own interests combined with the participatory method that calls for activity from the participants may cause distraction from the evidence and influence the credibility of the future workshop as evidence-based policy platform, unless this factor cannot be limited (Head 2015). Stevenson (2002) has noted that participants' different backgrounds and different levels of authority, skills, knowledge and abilities as well as characteristics of participants might cause interpersonal problems. For instance, the most extroverted participants may run over the most introverts and this way block the useful information (Stevenson 2002). The interviews revealed that the factor existed or happened in the workshop. However, it was successfully limited by the facilitators of the workshop, whose role as lobbying preventers was appraised by the participants in the interviews. This fact could lead to the conclusion stating that at least when dealing with interpersonal and communication problems, future workshop might be suitable or supportive method for evidence-based policy planning.

The most important factors behind the success of the workshop were in this research the group attending the workshop and the credibility of the person who introduces the scientific evidence. The interviews clearly made it evident that it is essential to select the right staff working in the workshop. Group dynamics of the participants is difficult or even impossible to forecast in advance, but it seems like skillful and capable facilitators might have a big role in evening the dynamics in a way that a fruitful conversation is

possible despite of some potential problems between the participants. Also, the background and expertise of the introducer of the evidence should be evaluated carefully before the workshop.

Some participants wished longer or somewhat more thorough workshop working. They experienced that a lot of things happened in a short time frame, and afterwards it was difficult to remember or separate so many details regarding the particular moments in the workshops and create any comprehensive analysis regarding, for instance the scenario working. ACTVOD model as a half day workshop worked quite well and its efficiency was noted by the participants, but there is room for development. For instance, its known weaknesses in scenario working emerged here, as well. Lauttamäki (2016) has mentioned that ACTVOD model has suffered from the defectiveness when it comes to the scenario working. The main reason usually is, and was also in this case, the time constraint. Running out of time is seen as a main reason for most of the challenges in scenario workshops (Lauttamäki 2016; Knapp et al. 2017).

Especially the implementation phase, the fourth phase of the workshop, which included the third session of the ACTVOD model, left room for improvements. The last stages of the future working toward the end product of the workshop, scenarios, remained quite shallow or brief mainly because of the time pressure. Perhaps it was the reason why the interviewees couldn't really remember and comment the results of the workshop, but they were more able to recall and bring up the other features from the futures table working, mostly related to the Fantasy phase, the third phase of the workshop and ACTVOD's session two, dealing with the drivers and future images construction rather than scenarios.

However, it is not unusual that in the scenario workshops with the short time constraint the actual value doesn't show in the results, but in the process and individual learning. Also, one of the benefits of scenario working is seen that it generally creates or innovates discussion around the topic. (Glenn 2009.) It also provides an opportunity to look at the trends and evaluate their possible impacts more critically (Knapp et al. 2017). Indeed, the individual learning and comprehension were also cheered by the participants. Some interviewees remembered especially the climate change as an interesting trend and told that the future workshop provided them new interesting insights and food for thought regarding this trend's impact on aquatic environment and lake management. Coincidence or not, but according to Knapp et al. (2017) climate change had been recently rated to be a dominant driver in natural resource management and environmental assessments, and so it seemed to be also in this case.

The role of narratives has been praised in scenario-making due its ability to embed and transfer information. They can provide insights generated in the workshop and create trust and credibility around the scenarios. (Burnam-Fink 2015.) It can be argued that the competitive advantage that Shell gained against its competitors had not been possible without Pierre Wack's catching narratives (Schwartz 1991.) By following this logic it could be argued that maybe the participants of the workshops would have been more capable to share the knowledge in a few minutes, which took the whole day from them to understand, if they have had a solid story to tell and to be shared within their work community. From the knowledge translation point of view the narrative could enhance the knowledge transfer and its utilization. On the other hand, would thorough narratives be the only right form of evidence articulation that was called for Head (2015) or are the short and sharp massages, as produced in this workshop, "sticky" enough to hold and remain in one's consciousness. It obviously depends on the audience as reminded by Jones at al. (2017).

5.2 In front of evidence

Second research question was to find out, could future studies perform as an interface for new scientific evidence and as a platform for evidence-based policy creation process and did the future oriented working open wider perspective for lake management and the evidence's role in it. If the results of the workshop are purely evaluated from the evidence-based policy point of view, it can be stated that although the interviewees were somewhat unable to express how the new knowledge influenced the actual workshop working, the evidence can be seen in the actual results. It is not a surprise since as Colebatch (2010) mentioned, it is usual that when the evidence meets the constructionist environment the accent shifts from the objective value of knowledge to the wider perspective and reaches its meaning in bigger picture that really matters.

The scenario paths clearly state that the use of greater amount of different lake management methods and their impacts should be taken in consideration, and bureaucracy in the using of different lake management methods should be decreased. This might be far from the original idea of scenarios that were supposed to be formed with ACTVOD model, but from the evidence-based policy perspective it sounds like a real instruction where policy making could be based on. Thus it could be stated that the future workshop

did not only succeed to work as an interface and platform for the knowledge translation activities, but also it, on some level, created results that could be considered to form new policy for the lake management. Also, when the impact of the evidence is evaluated from the interview basis it can be concluded that all interviewees said that they will pay more critical attention in the aeration method in the future.

This leads us to the third research question: has the workshop and evidence had any influence on participants work, working community and services? One interviewee had sent some material regarding the evidence to his colleagues and strongly encouraged them to get familiar with the evidence-based knowledge, trying to influence on the ongoing projects and possible use of the aeration method in their project management. This can be interpreted as a strong attempt not only to transfer new knowledge, but also to promote and support its utilization. The interview did not reveal if and how his attempts were acknowledged. So, it cannot be known if the utilization of the evidence took place in practice or formed any new protocols, which would then mean steps toward evidence-based management, which according to Bryman and Bell (2015) requires that decisions basis on the information coming from local context, practitioners knowhow, evaluation of the best available evidence and stakeholders opinion. On the other hand, it was difficult to study the knowledge transfer because not all interviewees had any chances to utilize the information due their current position. So, it would be perhaps too exaggerated to say that the future workshop succeeded as a superior method for completing successful knowledge translation process, but the findings showed that at least it got quite close.

This case study showed that the future workshop can serve evidence-based policy planning and work as a platform for new scientific evidence. It can enhance the knowledge translation process, fostering “translation activities”, that were asked for the research-based policy making by Head (2010). Different future workshops models with different time constraint and working methods should be tested and evaluated in order to select the best suitable workshop model for fostering the translation of the new scientific evidence and its utilization. The use of GMA based futures table seemed to be a rational and practical choice for the short a day workshop, and it enabled easy structured approach to the future oriented problem solving. It can be seen literately to submit the construc-tionist perspective, declared by Colebatch (2010), where the decisions are made through collective puzzling, where the issues are colored by different opinion and uncertainty. Participants were invited to share their opinions in order to construct perspectives and colored them according to the state of future that itself hold a great level of uncertainty.

The literature search of evidence-based policy and its implementation revealed that health and medical science seem to be pioneers in exploiting the best possible research knowledge, and have produced conceptual frameworks, theories and practical models from the topic, which could be investigated more thoroughly and emerge to the future studies. Knowledge translation was seen to form somewhat a key concept in the research field of evidence-based topics no matter where they are taking place in societal studies or healthcare. All concepts cannot be distinguished from their original science context and combine directly with other frameworks, but some of them could be used to construct crossdisciplinarity frameworks. For instance, in this study was introduced one example, "Evidence-based future workshop setting", which combined the Futures Studies methodology and the concept of knowledge translation adopted from health and medical science, aiming to provide new approach and creativity tool for evidence-based policy endeavor.

However, when making this study it became obvious that there exists a philosophical dilemma, which is built-in to the basics of the research setting. It is caused by the clash of soft and hard science's epistemology where framework from medical science is adopted to subjective and constructive science environment. It is a question of how participants' free will relates to the setting where new scientific evidence is introduced, and it is assumed that the participants somehow react to the evidence. The main purpose of future workshop cannot be to manipulate the participants to act in a way that scientists or anyone else hopes them to act. One could think that it's quite the opposite: one of the main purposes of the workshop is to be an arena where everyone can bring their own thoughts freely. It is not simple to argue whether evidence-based policy or knowledge translation truly actualize because those concepts were born in the context of health and medical research and therefore they are designed to describe situations where it can be assumed that the facts or evidences are true now and they remain immutable also in the future.

In this study, the participants did not presume that ineffectiveness of aeration is a scientific fact that is true and remain immutable in the future. The evidence wasn't either presented that way. It was only stated that aeration did not work in one research. That's why in this research setting, the participants were left with a true freedom of choice to make up their own mind about how they react to the new scientific facts that were introduced. In the end the participants' reflected their experience and they came with different kind of attitudes toward aeration. The fact that not everyone ended up with the conclusion that aeration is inefficient or even harmful method reveals that participants did not adopt

the new evidence without any criticality. Their previous experiences, values and even personal opinions about the person presenting the evidence effected the way how the evidence was absorbed.

This research setting left the participants' a free of choice also because of the future view of the workshops, even they were told that aeration doesn't work in this one particular setting in a particular lake, it was up to the free will of the participant's to decide how that fact will affect the future or does it have any significance at all. One participant commented interestingly that he would have wanted to hear opposite research results so that he could have make his own opinion towards the question. As Head (2015) noted, the evidence is often seen open to debate. And maybe sometimes it is. This dilemma might even effect evidence-based policy in total, because even the results of some scientific evidence might be clear at the moment, it is almost impossible to say for sure, what is the right decision for the future because the future is uncertain. History has also proven that an evidence that seemed to be undeniable, might became proven false when scientific methods or knowledge has developed. It is the legacy of democratic society that everyone can and should make their own mind.

Collective decision-making and constructionism can form a challenge even in front of the best research knowledge. Still and maybe because of that the soft sciences have been seen to have an important role in evidence-based policy endeavor. As clarified by Head (2015), the purpose of the evidence-based policy approach is to open dimensions between the science and policy making. This study pursues to conclude that there is one useful dimension to be opened in order to produce better evidence-based decisions - the future.

5.3 Methodological considerations and suggestions for further studies

Decision making and the process behind it should be based on the best available knowledge (Head 2015; Reay, Berta & Kohn 2009). This thesis could be applied when designing new ways to bring scientific evidence to part of decision making and evidence-based policy. However, certain methodological limitations must be acknowledged. It is possible that the researcher has unintentionally concluded interpretations supporting the presumptions or hypothesis of the research. Directed content analysis can also seduce the researcher to confirmation bias and according to Hsieh & Shannon (2005) directed content analysis can decrease the objectivity of analysis and guide the researcher to see rather

supportive than non-supportive evidence for his or her theory. This could have been minimalized for example by peer review which was not possible in this research because there was only one researcher.

The time frame of this thesis might have affected the credibility of this research. The theme interviews took place six months after the workshop and it is possible that participant's memories have faded or changed during that time. On the other hand, especially the questions concerning the transform of the evidence would be impossible to evaluate directly after the workshop. A conclusion for that issue could be two separate interviews or some other ways to collect participants' thoughts: first soon after the workshop and another for example six months later.

The anonymity was guaranteed to the participants which enhanced the credibility of the research because by doing so, the participants were able to share their experiences openly. On the other hand, the researcher was working as the facilitator during the workshop, and because of that it is possible that they adapted or modified their opinions for example in order to considerate interviewer's feelings.

The interviews were held in Finnish which increased the credibility of the research because the participants and the researcher were able to communicate by using their mother's tongue. On the other hand, some delicate nuances might have been lost in the translation in English. The number of interviewees was small. Two of the interviews were damaged due to technical problems, which decreased the population and the reliability of the study because two participants were excluded.

As mentioned, this case study showed that the future workshop could serve evidence-based policy planning and work as a platform for new scientific evidence. However, future workshop as a platform for evidence-based policy making deserved further investigation. For example, different future workshops models with different time constraint and working methods should be tested and evaluated. Even other methods and approaches for scenario making should be tested and evaluated in order to select the best suitable workshop model and tools for fostering the translation of the new scientific evidence and its utilization. The role of the facilitators was significant in this study. In further research it could investigated what kind features and abilities good facilitating includes and how those could be reached. Also, the question of how participants' free will relates to the setting where new scientific evidence is introduced could be investigated further and how presenting new evidence changes the character of workshop and its participatory nature.

6 CONCLUSION

Briefly, this study aimed to find out whether future workshop could work as a platform for evidence-based policy endeavor and foster better research knowledge-based decision making by offering tools and methods to improve the knowledge translation process. This study showed that it is possible to future workshops to serve evidence-based policy planning and to work as a platform for new scientific evidence. It also seemed like future oriented working did open wider perspective for lake management and the evidence's role in it.

This study also discovered, what factors should be considered important when using future workshop as a platform for presenting new evidence. The participants thought that in general, it is important to have right people who, for instance share the same initial knowledge base regarding the topic, in the workshop and facilitator's role was considered important in making sure that the conversation remains equal to all the participants. Also, the time available was mentioned to be an important factor in a successful workshop. The expertise of the person presenting the evidence and the participants' backgrounds were considered important when the interviewees were asked what factors influenced their experience of introducing the new scientific evidence.

The third question was, has the workshop influenced the participants work, working community and services. Three of the participants felt that the workshop did lead to some communication and the fourth participant thought that even though he did not have anyone to communicate with, the workshop offered a lot of food for thought for the future.

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APPENDIX 1 FUTURES TABLE OF THE WORKSHOP

	Themes	1. Future's state	2. Future's state	3. Future's state	4. Future's state	5. Future's state	6. Future's state
Driving forces	1. "Oxygen's important role in regulating internal stress"	Perception disappears	Perception weakens	Perception remains	Perception strengthens	Contextual correct information strengthens	
	2. "Aeration reduces internal stress"	Perception disappears	Perception weakens	Perception remains	Perception strengthens	Contextual correct information strengthens	
	3. "Aeration improves quality of water"	Perception disappears	Perception weakens	Perception remains	Perception strengthens	Contextual correct information strengthens	
	Climate change's impacts	Rainfalls are divided differently between seasons, duration of lakes' ice cover shortens	Increasing rainfalls and water streaming nutrien flows increase (especially during Winter)	Plants growing season shortens, plants ability to store nutrients increases	Duration of ice cover shortens, and therefore winter's oxygen less period shortens	Amount of rain increases but duration of growing season lengthens. Result is +/-	Risk of floods and other extreme phenomena increases
	Urbanization	Phosphorus removal of the waste water treatment plants is insufficient -> stress is centralized due centralized housing	Stress decreases in areas facing deurbanization, but also the interest for restoration decreases	Temporary summer residents want still that restoration of the lake continues	Double sewering of the cities (rain water + domestic waste water) causes problems, overflows during the high peak of rainfalls	Over-shooting independent initiative of summer residents is a risk, urge to carry out restorations according to own interests rather than lake's condition	

Strategy	Goals of restoration	Users of the lakes define the goals and restorations are targeted by users' interests. Threat with other lakes are not restored because it depends on residents' activity	Active people might fail in defining the desirable target level. Lack of control if there are no experts involved	Goals are not necessarily achieved if there is no way to influence external stress	Focus of financing transfer to inhabitants' projects when big targets can not be reached	Lakes that are in very bad condition could be considered as sedimentation tanks instead of trying to restore the lakes	
	Clients/financers	Municipalities/joint municipalities	Associations, threat when become unilateral, population's aging	Owners of water areas	Government, EU	Agricultural enterpreneurs with the support of environmental finance support. Finance support on funds to be used by lake protecting associations	Companies/stress leaders through funds, for example fees of leisure use (obligation or image benefit)
	Products and services	Utilization of wind/solarpower in restaurations, Savonius-rotor	Collecting blue-green alga → biogassing → energy to restaurations, rotation solutions, utilization in neighbouring areas	Use of urine as fertilizer, social approval?	Aeration as a turnkey solution	Designing and expertise are still needed	Bureaucracy and legislation block functional and tested methods, slow pace of changes
	Revenue models	Leasing service to the equipment	Community fundraising campaigns	If removed phosphorus would have a price, it would be profitable to be removed			

	Research and development						
Developing restauration methods	Reducing external stress	Removal of phosphorus from streams by chemical engineering (ferric sulphate, Calcium hydroxide), wherever possible it is combined with reducing phosphorus stress	Using biochar ("raki"-project), for instance energy willow, different kind of applications to water purification	Use of removed phosphorus as fertilizer recycling phosphorus	No-till farming decreases nutrient drainages	Multi-functional wetlands, parallel basins instead of one large basin (not that efficient in removing nutrients, other goals are important)	The development of municipal and industrial waste water treatment and tightening the restrictions
	Aeration	Lakes own oxygen reservoirs are used in aeration	Aeration is used in increasing lakes oxygen levels, transfer atmosphere's oxygen to water	Developing future's innovations	Managing equipment automatically by concentration in real-time		
	Chemical methods	Presipitation of phosphorus by chemical methods					
	Biomanipulation	Useless without decreasing external stress	Utilization of rough fish masses for example in biomass or raw material of food.				

			For instance, Perch, Roach or Carp bream				
	Running of water/ raising water level	Water level increase may flush nutrition from the shore – temporary threat, but accumulates to the sediment	Increases the water volume				
	Dredge/removing water plants	Removing water and transferring plants	Dredged waterplants are use as a substrate instead of turf	Excessive mowing of water plants may lead to homogenization of flora	Biodiversity is forgotten when water plants are removed	Controversial impacts of dredging, it can be a threat (nutrition releases) or opportunity (gentle "mammoth dredge")	
	Measurements	The most significant stress factors are found by measurements, tools are targeted to those factors	The measurements become more accurate and real-time and therefore it's easier to get hands on the stress factors	Results of measurements and research to better use with applications	Modelling is difficult, and it is not sufficient as a tool		
Other factors?	Effecting politics	Englighten politicians and officials regarding functioning methods					