Norwegian University
of Life Sciences

Master's Thesis 2019 30 ECTS
Faculty of Landscape and Society

Advancing an Ecological Tax Reform: Feasibility, implementation and socio-economic aspects

Tone Svendsen Endal
Master of Science in International Environmental Studies

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Tone Svendsen Endal
14.05.2019

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tone.svendsen.endal@gmail.com

Noragric
Department of International Environment and Development Studies
The Faculty of Landscape and Society
P.O. Box 5003
N-1432 Ås
Norway
Tel.: +47 67 23 00 00
Internet: https://www.nmbu.no/fakultet/landsam/institutt/noragric

Declaration

I, Tone Svendsen Endal, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for award of any type of academic degree.

Signature……..

Date……

Acknowledgements

I would like to thank Professor Erik Goméz-Baggethun for his motivating encouragement, valuable advice and ideas.

I am grateful to all the informants who took the time to share their reflections and knowledge with me.

And a huge thanks to my family and friends for always supporting me.

Abstract

An Ecological Tax Reform is argued to discourage environmentally harmful activities and to raise revenues that can improve overall welfare. The aim of this thesis is to increase our understanding of the potential to advance more ambitious green tax reforms in the context of the green shift in Norway. Through interviews with key informants, the feasibility and implementation of an Ecological Tax Reform has been scrutinised, along with the socio-economic considerations that needs to be accounted for to advance policies towards an Ecological Tax Reform. This research suggests that a reform is feasible, but key issues need to be determined in terms of implementation, while carefully designing environmental taxes to limit negative distributional effects. Implemented correctly, an Ecological Tax Reform should be a central component of the green shift.

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List of acronyms and abbreviations

CO_2 – Carbon dioxide

EFR – Ecological Fiscal Reform

ETR – Ecological Tax Reform

EU – European Union

EU ETS – European Emissions Trading Scheme

EV – Electric Vehicle

IPCC – Intergovernmental Panel on Climate Change

LNG – Liquid Natural Gas

N_2O – Nitrous oxide

NGO – Non-Governmental Organisation

NOK – Norwegian kroner

NOx – Nitric oxide and nitrogen dioxide

NSD – Norwegian Centre for Research Data (Norsk senter for forskningsdata)

OECD – The Organisation for Economic Co-operation and Development

PES – Payment for Ecosystem Services

PGP – Provider Gets Principle

PPP – Polluter Pays Principle

SO_2 – Sulphur dioxide

SSB – Statistics Norway (Statistisk Sentralbyrå)

WWF – World Wide Fund for Nature

ZERO – Zero Emission Resource Organisation

1. Introduction

By the end of 2018, The World Wide Fund for Nature (WWF) and the Intergovernmental Panel on Climate Change (IPCC) each launched gloomy reports on the declining state of nature in 2019 The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) launched a report stating that one million species are threatened by human action and that ecosystems worldwide are declining at unprecedented rates (IPBES, 2019). A 60% decline from 1970 to 2014 in population sizes of species, where freshwater fish is the vertebrate which has the highest extinction rate is a clear example of the severe loss of biodiversity we are facing (WWF, 2018). Moreover, we have already reached a 1ºC global, average temperature rise, and are facing severe consequences from a 2ºC warming. But also a 1,5ºC warming pose a vast threat for the nature and humans (IPCC, 2018). The growing environmental impacts from human activities are undermining the natural systems that we depend on posing severe risk for human well-being (Rockstrom et al., 2009).

To deal with these unique challenges, ambitious goals and targeted policy instruments are needed (UN Environment, 2019). Taxes have been proposed as an instrument to discourage environmental harming activities for a century (Pigou, 1920), and have been widely implemented across the European Union (EU) over recent decades (Institute for European Environmental Policy, 2017). Taxes can be cost-efficient in achieving the goal of reducing environmental impact, but they may also be unpopular and have unwanted distributional effects (Goulder, 2013), as the yellow vest protest movements in France, triggered by an attempt to introduce a new fuel on tax, illustrates (Bouyé & Dagnet, 2018).

Social unrest from green taxation hints that we need policies that do not only deal with the environmental issues at hand, such as biodiversity loss and climate change, but which also takes into account the broader socio-economic contexts in which taxes are introduced, including their distributional effects. An Ecological Tax Reform (ETR) has been proposed as an instrument that holds potential to meet both of these challenges: reducing environmental pressure and expanding the tax base of welfare states. An ETR entails putting a bigger portion of the tax burden on environmental “bads” and reducing taxes on wanted activities, “goods”, such as labour (Daly, 1994). In that way, an ETR discourage environmental harming activity at the same time it generates revenue the government can use to increase overall social welfare (Bernow, 1998).

Corresponding to the reasoning above, the overall aim of this thesis is to assess the potential to advance policies in Norway towards an ETR, that can contribute to simultaneously enhance environmental and social sustainability, through a fair distribution of the costs involved in reducing environmental harm. Norway has a tradition for cost-efficient instruments (Boasson & Lahn, 2017), and was one of the first countries to implement environmental taxes (Ekins, 1999) which makes it an interesting case for this study. The specific research questions are: 1) What is the feasibility of an ETR in Norway?, 2) How can a green tax reform best be implemented? And 3) What are the main socio-economic considerations to be taken into account when designing environmental taxes?

The thesis is structured in seven chapters. The next chapter will describe the theoretical framework and provide background on the design and implementation of different economic policy instruments. Environmental taxation and corresponding effects will be scrutinised. Chapter 3 present the case study, looking at the policy context in Norway and going into detail on the current use of taxes as a policy instrument. The next chapter outlines the methodology. The results are presented in chapter 5 and a discussion follows in chapter 6 to put our results in perspective. Chapter 7 summarise my findings and concludes with lessons learnt.

2. Theoretical frame

2.1 Ecological economics

The overarching framework of this thesis is ecological economics. Modern ecological economics developed from the ideas of the economists Nicholas Georgescu-Roegen in the 1970s and the discipline was formally established in the late 1980s (Røpke, 2004). Ecological economics "addresses the relationships between ecosystems and economic systems in the broadest sense" (Costanza, 1989, p. 1). Ecological economics portrays the economic system as a subset of the natural system (Spash, 1999) . Ecological economics portrays the economy as depending on the natural environment in at least two fundamental ways. First, as source of all energy and materials that the economy turns into consumption goods and services and second, as the sink that assimilates and recycles the pollution and waste created in the economic process (Daly, 1994). The social environmental costs of economic growth and the economic instruments that can be used to prevent or minimize these costs is a central concern of ecological economics (Gomez-Baggethun et al. 2010).

2.1.1 The problem of external environmental costs

A core theme in ecological economics are the 'hidden' environmental costs of growth that are ignored in conventional economic accounts (e.g. in GDP and company balance sheets), variously referred to as "externalities" (Vatn & Bromley, 1997) or 'cost-shifting gains' (Kapp, 1971). The term externality developed about a century ago from Pigou's work on unintended disservices. An unintended disservice is something that arises from a given activity which is not accounted for by the economic actors (Pigou, 1920). Another way to put it, is that the created side effects are not reflected in the prices for the agent of the economic activity (Labandeira et al., 2007). While the bulk of the literature portrays externalities as accidental market failures, ecological economics propose another way to look at unaccounted environmental costs. This approach argues that externalities are an inherent part of the current economic system (Bator, 1958; Kapp, 1971; Vatn & Bromley, 1997). This is because ecological economics sees the economic system as a subset of the ecological system, different from environmental economics which usually sees them as two separate spheres (Daly, 1993; Rees, 1998). Therefore, if one assumes that we have an economic system where all actors are rational and profit maximisers like neoclassical economics does, with no property rights defined on the side-effects, the agents will systematically shift the costs (or benefits) onto third parties (Vatn & Bromley, 1997). The term externality is more technical, whereas the latter term of cost shifting includes a political element of distributional justice.

If individual companies were to take into account the societal costs created by their production, they would increase their private costs. As they are profit maximising and have no incentives to internalise the costs, the logical thing for them to do is to ignore these costs. Thus, the costs will be carried by a third party or society as large (Kapp, 1971). These may be individuals, other companies, other countries or future generations. Even though the current economic system inherently creates cost-shifting due to not including the environmental degradation as part of the production costs, Pigouvian taxes have been widely used as a way to internalise the external costs (Kapp, 1971). They have also been proposed as an alternative tax base to income taxes as part of a post-growth economy (Daly, 1994).

2.2 Economic instruments for environmental protection

2.2.1 Types of economic instruments

Economic instruments for environmental protection give price signals as a way to influence behaviour (Vatn, 2015a). These instruments follow two central principles: The Polluter Pays Principle" (PPP) or the Provider Gets Principle (PGP). The former entails that whoever is

causing environmental harm has to pay for the damage they create. The latter principle involves compensation to whoever provides (or does not reduce) the condition of an environmental resource or service (Vatn, 2015, p. 172).

Polluter pays-based instruments

A market for carbon trading falls under the first category. By creating a market for the unwanted externality, the actors have to pay for creating the disservice of for example carbon emissions (Spash, 2010). The government sets a target level of emissions, and creates a number of polluting permits corresponding to this. The economic actors then have to buy permits corresponding to their emissions above the target level, and thus the polluter pays. By making the permits tradeable, the actors that easily can reduce their emissions can buy less permits or sell their surplus, while actors that cannot reduce their emissions can buy the needed permits in the market. As a result, it is expected, we reach the target level of pollution in a cost-efficient way (ibid). A downside of this approach is that it can lead to commodification of nature by having to put a price on it in order to make it exchangeable in a market (Gómez-Baggethun et al., 2010).

Another instrument based on the PPP is taxation. As already stated, Pigou proposed in his work "The Economics of Welfare" that to avoid unintended disservices like pollution or resource depletion and the associated cost shifting discussed in the previous section, we should tax the activity creating the disservice so that the private benefit would take into account the social costs (Pigou, 1920). Taxing for example sulphur dioxide from a factory at a level corresponding to the social cost the emission entails, is a way to make the polluter pay principle work following the Pigouvian approach to environmental taxation.

A pitfall of using instruments according to the PPP logic, is that even though they attempt to consolidate the rights of the victim, there is "confusion as full polluter's responsibility is not instituted (..). And the victims are not protected by an indisputable right to a clean environment" (Vatn, 2015, p. 335). As the regulation happens *ex post* an environmental impact, usually the victims have to accept some level of pollution than if the regulation happened *ex ante* (ibid).

Provider-gets based instruments

Subsidies fall under the category of the PGP. Improving the state of the environment by encouraging actors to adopt more environmentally friendly behaviour can be done through

subsidising alternatives. For example, giving subsidies to technology development or subsiding actors that want to purchase less polluting machinery (Parry, 1998).

Another instrument where the provider gets paid, is "payments for ecosystem services (PES)". A forest owner could for example be paid to *not* log his forest and thus be a provider of the ecosystem service the forest hosts. Conserving the forest is a way to avoid the externality that would arise from deforestation. Beneficiaries of these services paying the owner, can make them inclined to choose conservation over exploitation (Engel et al., 2008). However, there is also the risk of motivation crowding out, which refers to erosion of intrinsic motivation for conservation, which again can lead to less conservation (Rode et al., 2015)

2.2.2 Assessment of economic instruments

To evaluate the legitimacy of a policy instrument, Vatn (2015a) has proposed a framework based on the notion of input and output legitimacy. The former refers to the policy process itself, while the latter addresses the outcome of the policy instrument and is the one that will be discussed in this thesis. Output legitimacy is defined by three different criteria by Vatn (2015a, p. 163):

> (a) distributive justice: regards principles for allocation of benefits and burdens across activities in a society
>
> (b) effectiveness: concerns the capacity to ensure that the defined goals are reached;
>
> (c) cost - efficiency: concerns the ability to reach goals at the lowest costs – including transaction costs.

The literature discusses these criteria in relation to the different policy instruments, for example in ongoing discussion on whether environmental policy regulations should rely mostly on prescriptive regulations versus market-based incentives. Market-based incentives are favoured by some economists over legal instruments because they are seen as a more cost-efficient way to reach optimal behaviour (Stavins, 2003). The economic instruments use prices and market signals instead of, for example giving out pollution permits or setting a maximum level of pollution. Well-designed instruments are supposed to give incentives for economic actors to behave in a way that is beneficial for themselves and society as a whole (Stavins, 2003). They are also perceived by some authors as more flexible as they give room for individual adaption by the actors (Helfand, 1999). Although this may be true, there are also negative consequences of using economic instruments and we need to be aware of how

the economic instruments perform on the other two criteria of effectiveness and distributional justice. Furthermore, recent contributions have noted that the assumed dichotomy between market-based instruments and prescriptive policy regulations is a false one, and that all economic instruments need an element of public policy regulation in order to be effective in accomplishing environmental goals (Gómez-Baggethun & Muradian, 2015). For example, in a cap-and trade system, the element that ultimately protects the environment is the cap, which is set by public authorities by command. The trade element may increase the cost-effectiveness of reaching a given policy target but does not protect the environment itself (Vatn, 2015b). Hence, this thesis emphasizes the economic instruments in relation to public policy regulations. An example of economic instruments where public policy regulations plays a central role is environmental taxes.

2.3 Green taxes

2.3.1 Definitions

In the literature there is not a consensus on what is defined as environmental taxes in the practical appliance of them (Kolshus & Braathu, 2013a). Not only do the definitions of environmental taxes vary in the literature, between institutions and countries, but there are several types of taxes and fees that could be implemented. The definition that is most widely used by institutions such as the Organisation for Economic Co-operation and Development (OECD) and the European Commission is "A tax whose tax base is a physical unit (or a proxy of it) that has a proven specific negative impact on the environment. Four subsets of environmental taxes are distinguished: energy taxes, transport taxes, pollution taxes and resources taxes (OECD, 2005). For statistical purposes, this definition makes comparison between countries possible.

It is noteworthy that according to this definition, the tax does *not* have to have an actual environmental effect *or* an environmental motivation itself to be considered an environmental tax. Correspondingly, the definition by the OECD differs from the Pigouvian reasoning of internalising the external costs, where the tax should be aimed at reducing environmental impact by giving a price signal as a primary objective. Hence, the OECD definition covers the Pigouvian environmental taxes, but also a wider range of taxes, as it includes fiscal taxes that are not explicitly designed for reducing environmental impact, but only generate revenue from the taxation of a physical unit that has an environmental impact (Kolshus & Braathu, 2013a).

The broad definition used by the OECD and others could actually include all economic activity as in the long run all activity may have an environmental impact (Bruvoll, 2009).

The 1) Pigouvian and 2) the OECD 'environmentally related taxes' definitions, are the two I will use for this thesis. Nonetheless, I draw upon Stavins' (2003) typology to elaborate which types of taxes that the two definitions may consist of. Stavins addresses seven categories of environmental taxes. The first category is 'effluent charges' which corresponds to the definition of Pigouvian taxes. They are used, for example on different types of emissions such as CO_2, SO_2, nitrogen and hazardous waste. He also outlines a second category 'deposit-refund systems', where one puts an extra cost on buying a product which you will get back when the product (or waste of it) is properly recycled or disposed of, which can give incentives for proper waste treatment. These can be seen as a special type of Pigouvian tax, and is implemented to avoid illegal deposit of waste that have severe effects on nature and humans. The most widely implemented version of this category, is the tax on beverage containers. Other examples are batteries and light bulbs. Although both of these types have an environmental motivation as the primary purpose, the fiscal effect may also be important and a significant source of revenue for the state (Stavins, 2003).

The third category is "tax differentiation" which I refer to as a provider-gets instrument in the previous section. In this category, one does not directly tax the environmentally harmful activities but does so implicitly through tax exemptions, credits and subsidies (ibid). If there is a tax exemption on electric vehicles, this will implicitly be a tax on fossil cars without the exemption. In the same way, a subsidy for using a cleaner technology will make the environmentally worse technology more expensive. The latter category of tax differentiation is highly relevant, as it can have great impact on behaviour and are seen as one of the reasons Norway have such a high share of electric vehicles (Boasson & Lahn, 2017). I will only discuss this type when looking at exemptions from Pigouvian or environmentally related taxes.

The fourth tax type is 'user charges'. A user charge could be a fee for entering a park. The charge may be implemented to finance the maintenance of the park, but the price might also lead to decreased use of the park. It is also widely used in transportation as toll booth charges. Toll booth charges are rarely set so high to actually stop the use of cars, but serves to raise revenues to for example road projects. Next comes 'sales taxes' which are put on the sale of certain goods or services, but might be promoted as environmental taxation. An example Stavins gives of these are fees on new cars, motor fuels, fertilisers and more (Stavins, 2003).

Both of these types fall under what I call the OECD definition. An important notion is that although these do not have changing behaviour as primary objective, but rather fund-raising, they may have an environmental effect. 'Insurance premium taxes' is the next category, which consists of financing insurance pools against potential risks such as oil spill liability trust funds, but will not be considered in this thesis. The last category is 'administrative charges' which are implemented to cover the costs of environmental programs rather than change behaviour and will only be briefly treated for the remaining of the thesis. Related to the different categories of taxes, is how we determine the tax level each should have.

2.4 Implementation issues in environmental taxation

Key issues discussed in the environmental taxation literature include how to set the tax level, where in the production or consumption process to implement the tax and how to recycle the tax revenue.

2.4.1 How to set the tax level

For this thesis, I outline three approaches for how to set an environmental tax level. One being the Pigouvian-based, secondly, a policy target-based and lastly, a desired revenue-based.

To explain the economic theory behind the choice of the tax level in Pigouvian taxation, I will use the example of CO_2 coming from an electricity plant. CO_2 emissions are a negative externality from electricity plants, due to carbon dioxide emissions' contribution to climate change. The idea of the Pigouvian tax is to set the tax level so that the costs the company face is equal to the marginal social costs of CO_2 (Baumol & Oates, 1971; Bovenberg & de Mooij, 1994; Helfand, 1999; Repetto et al., 1992; Sandmo, 2011; Stavins, 2003). In that way, the company now has to internalise the full cost of the emissions it produces, instead of shifting these costs onto a third party and thus gets an incentive to reduce emissions.

However, setting the tax level equal to the social costs of the externality has proven to be hard (Baumol & Oates, 1971). Nature is complex and determining the exact effect of an activity on the environment is challenging due to unknown tipping points, feedback, inertia and non-linearity in natural systems (Hastings & Wysham, 2010). Therefore, Baumol and Oates (1971) suggests an approach where we define an acceptable level of an externality, and then set the tax at a level where we would obtain, for example, the target level of pollution. In practice this can be seen in for example the Paris Agreement where the goal is to stay under an emission level that leads to no more than 1,5 ºC rise of global warming. According to this goal, countries should implement policies to reduce greenhouse gas emissions (United

Nations Framework Convention on Climate Change, 2015). According to neoclassical economic theory this would not lead to a Pareto optimal allocation of resources, but would at least be practically possible to determine (Baumol & Oates, 1971) .

A third way to set the tax level is more relevant for the environmentally related taxes, if the fiscal effect is the primary purpose. Then, the desired amount of revenue could be the guiding criteria for how to set the tax level. It is important to note that in practice, a mix of the three different ways to set a tax level could be used.

Regardless of at which level we set the tax, when the price on the production of a certain quantity of for example electricity rises due to a tax on emissions, it becomes more expensive for the company to maintain the same production level. Therefore, they have an economic incentive to reduce their emissions. Mainstream economic theory predicts that a company will do abatements until the point where their marginal abatement cost is equal to the tax rate, and thereafter pay the tax. In other words, when it is cheaper for them to reduce their emissions, they will do that, but they will pay the tax when that is cheaper than the abatement costs (Helfand, 1999).

Even though taxes are argued to be effective in reducing emissions (Patuelli et al., 2005), exemptions for certain industries can make the total effect hard to measure. In addition, there is not a 1:1 relationship between the tax level and the achieved effect when introducing taxes, since they interact with other policy instruments. This makes it hard to determine exactly how much of the effect on the environment can be attributed to the tax (Somanathan et al., 2014; Stavins, 2003).

A matter that could arise, is that when making environmental harming activities more expensive, an economic rational actor will as stated try to move away from this type of behaviour towards less harmful activities to reduce their costs. Through doing this, an environmental tax will erode its own tax base (Bovenberg, 1999).

2.4.2 Where to implement the tax

Vatn (1998) illustrates a key issue in taxation of environmentally harming activity, namely the problematic definition of what stage of the production or consumption process that should be taxed. Depending on the level of transaction costs of monitoring emissions and whether the emissions are homogenous or heterogenous, we could either tax the input side or the output side, i.e the carbon content of fossil fuels or the CO_2 emissions coming from an individual's car.

Taxing emissions from fossil cars is an example of where we should tax the input side. The emissions are homogenous as the carbon content from fossil fuels, and thus CO_2 emissions and contribution to climate change, are the same regardless of where they are emitted. However, the transactions costs of measuring the exact emissions from each car is very high, and hence, from the perspective of reducing transaction costs, it would make more sense to tax the input side (Vatn, 1998).

On the other hand, the taxation of sulphur dioxide should happen on the output side as the emissions can have very different effects on the surroundings depending on in which ecosystems they are emitted. Geographic characteristics such as winds and precipitation will also determine the environmental effects of sulphur (Vatn, 2015a).

For the example of taxing nitrogen in agriculture, neither of these might be the optimal point of regulation. It can be unprecise to regulate on input as with the previous example it is geographically determined what environmental impact the by-product nitrates have. And as the first example, the transaction costs can be considerable of regulating on the output side. So, a third way of regulating can be the production process itself and require technology standards that are certain to give less emissions (Vatn, 2015a).

2.4.3 Revenue recycling of green taxes

Baranzini et al. (2000) outline three different ways tax revenues could be recycled: 1) a revenue neutral tax reform where the revenue goes to decreasing other existing taxes, 2) earmarking the revenue to environmental projects, research development, support schemes or 3) compensation measures such as returning the revenue in a lump sum fashion or subsidising switching to cleaner technologies. The revenues can also be absorbed by the general state budget instead of being recycled directly.

The first way of recycling, a revenue-neutral approach, where we levy a bigger portion of the taxes on something we want less of (for example pollution), instead of something we see as constructive (such as labour) has been called an ecological tax reform (Bernow, 1998). The other three types of revenue recycling should be referred to as an environmental fiscal reform (Clinch et al., 2006).

In practice, all the types of revenue recycling have been tried. The carbon tax reform in British Colombia in Canada recycled the revenues in various ways back to households and businesses through tax cuts, lump sum transfers and low-income tax credits. A combination was used to be able to offset the potential distributional effects as the carbon tax itself is

regressive (Murray & Rivers, 2015). Other types of revenue recycling has been to increase employment through lowering the statutory pension contributions (Beuermann & Santarius, 2006) or lower the income tax (Deroubaix & Lévéque, 2006). In Norway, environmental taxes has gone to the general state budget (with an exception of a small portion of the electricity fee) (Kallbekken & Aasen, 2010) or to reduce other taxes (Finansdepartementet, 2016).

Clinch et al. (2006) concluded that a "combination of earmarking a proportion of revenues to environmental projects and diverting rest to reduce labour taxes is probably the best approach" (p. 960) to achieve public acceptability. In addition, it is most important that a proportion of the funds is used to ameliorate any regressive impacts. A more recent study by Carattini et al. (2019) found that funding of (emission) mitigation projects around the world got the most public support, while lowering the income tax and lump sum transfers (called per capita pay-outs) were the other preferred types of revenue recycling.

2.5 Socio-economic considerations for environmental tax design

Taxes are not implemented in a vacuum and can have different socio-economic implications other than making environmentally harmful activities more expensive. The ones I outline in this section are effects on motivation, innovation, competitiveness and distributional effects.

2.5.1 Effects on motivation

Sometimes taxation and setting a price on an activity, can crowd out the intrinsic motivation to do "the right thing" by being given the opportunity to pay a price instead (Rode et al., 2015). Heller and Vatn (2017) found that when a differentiated waste fee was introduced, the economic incentive did not incentivise to more sorting and the normative element of why people sort waste became evident. In some cases, it even led to less sorting, in comparison to when there was no fee. The effect on motivation of taxes, and whether or not they lead to reduced motivation can be sector specific.

2.5.2 Effects on innovation

Taxes can encourage innovation through putting a higher price on a factor of production (Pearce, 1991). To avoid paying the tax, companies can abate their emissions through improving their production process, which may include developing new technology, innovation and increasing energy efficiency (Helfand, 1999). This is also an argument used to illustrate how an economic instrument may be superior to a traditional command-and-control approach ibid).

2.5.3 Effects on competitiveness

On the other hand, environmental taxes affect the competitiveness of the industry (Lin & Li, 2011).The pollution haven hypothesis or "carbon leakage" is a potential negative effect of environmental taxes (or any other type of environmental policy). The concept refers to when a company or an industry decides to move their business abroad as a consequence of a tax (or other policy instrument) that makes their production more expensive. A stricter environmental policy can make it more advantageous to move to a location with laxer regulations, usually from a developed economy to a developing economy (Branger et al., 2017; Cole, 2004; Copeland & Taylor, 2005). The "leakage" doesn't necessarily have to be carbon, but can be any environmental harming output that is subject to an environmental tax. The effect might actually lead to *higher* global greenhouse gas emissions, when companies move to other countries, as these countries may have inferior emission control (Babiker, 2005).

2.5.4 Distributional effects

In addition to the above-mentioned effects of taxes, they may also have distributional effects on the rest of society. The tax interaction effect can lead to negative distributional effects. By setting a tax on a factor of production such as energy through taxing the carbon content of coal, this will increase the overall prices on goods and services (Murphy, 2009). When the prices of goods and services rise, the real wage workers are left with decreases. Thus, the environmental tax is implicitly working as a tax on labour. The interaction effect will have a disproportionate effect on low income groups and thus the tax might work regressively (Pearce, 1991).

As this effect can leave someone worse off than other, public acceptability and support becomes a big challenge when it comes to implementing environmental taxes. In European countries where a reform has been implemented many are not even aware that it has taken place, due to lack of information (Dresner et al., 2006). This can be seen by the recent events in France when the fuel taxes increased in an attempt to reduce greenhouse gas emissions was seen as unfair. To avoid these types of reactions the design of an environmental tax is critical (Carattini et al., 2019).

On the other side, environmental taxes have been argued to provide a "double dividend" (Bovenberg, 1999; Goulder, 1995; Parry et al., 1999; Pearce, 1991). The double dividend can occur when the environmental taxes 1) discourage negative activities, like emissions, and 2) provide the governments with revenue which can be used to increase overall social welfare (Pearce, 1991). The social welfare can be increased by using the revenues from environmental

taxes to reduce other taxes that are seen as distorting, such as taxes on labour (Sandmo, 2011). From the neoclassical economic reasoning, these taxes have a dead-weight loss as people will not work as much as they would have wanted to if the taxes were not there (Goulder, 1995). Goulder (2013) outlines what is necessary for the double dividend effect to exceed the tax interaction effect; 1) The initial tax system must be inefficient along some non-environmental dimensions, and (2) The revenue-neutral tax reform reduces this non-environmental inefficiency (p. 56). Raising revenue from non-distorting taxes such as environmental taxes would then lead the economy better off than if we were to raise them on labour (Repetto et al., 1992).

However, as seen in the previous section there are also other ways to use the revenue from environmental taxes, and public acceptability might call for other measures as well such as earmarking and lump sum transfers. In line with this, Bernow et al (1998) suggests that to avoid negative distributional effects of the increase in environmental taxation, one could maintain and increase the progressivity of the income tax system with the revenue by lowering income tax.

3. Background and the case study of Norway

Norway is used as the case study for this thesis. The choice is motivated by the following reasons. Norway was one of the pioneering countries to introduce environmental taxes (Ekins, 1999), along with a tradition for cost-efficient policies (Boasson & Lahn, 2017). There is relatively less resistance towards of taxation compared to other countries (Kallbekken & Aasen, 2010) and Norway has a policy context of a "green shift" that will be outlined below. These factors give Norway a potential for a more comprehensive reform, and is thus an interesting case when assessing central elements of advancing policies towards an ETR.

3.1 Policy context: 'The green shift"

In 2015, The Language Council of Norway elected "the green shift" to be the new term of the year. Defined as "a continuous, ongoing, inevitable and unstoppable process, which entails reducing greenhouse gas emissions and improved resource efficiency in all parts of society that also provides new opportunities for wealth creation" (own translation, Bjartnes, 2015). The term was chosen due to its widespread use in the public debate and it highlights the importance of the societal transformation required for Norway to become more ecologically sustainable (Språkrådet, 2015). The government defines it as moving towards the production

and consumption of goods and services that are less damaging for the environment, while keeping the human activity within planetary boundaries (Regjeringen, 2014a).

According to the government report on "Environmental pricing", the most pressing environmental problems in Norway are climate change, regional and local pollution, acid rain, tropospheric ozone, biodiversity loss, loss of cultural landscape and spread of hazardous chemicals, and noise (NOU 2015: 15, 2015). Some of the expected consequences of climate change in Norway are a rising sea level, more extreme weather, shorter winter seasons, and also some consequences that might be positive such as longer growing seasons for agriculture (Hanssen-Bauer et al., 2009). Among the reasons for paying attention to this environmental problem is the significant per capita contribution to the problem (Energi og klima, 2018).

Every new government releases a government platform which is a set of guiding principles for its policy for the next four years. The concrete goals for the "green shift" related to the environmental challenges we face today, are anchored in the official declaration from the government platform signed by the presents conservative government in Granavolden, January 2019 (Regjeringen, 2019). The overarching goal from the declaration is to build environmental policies upon the precautionary principle and humans' responsibility as stewards, that at the same time strengthens Norwegian competitiveness, generates 'green growth' and 'green jobs'.

Among the most pressing environmental issues, a clean ocean, conservation of biodiversity and phasing out environmental toxins stand among the central priorities of the Norwegian government (Regjeringen, 2019, cp. 12). Some of the concrete goals are to "strengthen the efforts to reduce marine littering, through among others to increase the support to various forms of clean-up measures", "work towards the Aichi-targets", "protect and conserve 10% of forests", "set new and ambitious goals for phasing out prioritised environmental toxins" and "that Norway should become a pioneer in the development of a green, circular economy that utilises resources better" (Regjeringen, 2019, ch. 12).

Yet, of the environmental problems, the climate issue is the one that receives the most attention in policy making (Bruvoll & Dalen, 2008). The goals for climate policy in the government platform include: 1) reducing greenhouse gases by 45% in 2030 compared to the 2005 level, (mainly on site, making limited use of the flexible mechanism with the EU), and

2) developing a strategy on how to meet this goal in the non-Emissions Trading Scheme sectors when an agreement with the EU on common achievements is reached.

Since 2012, the climate policy is also anchored in parliament through the so-called Norwegian climate conciliation (*forlik*, in Norwegian) agreement (Regjeringen, 2014b). The climate conciliation is the agreement the *Storting*, the Norwegian Parliament, landed with the government after processing the white paper[1] on Norwegian climate policy in 2011-2012 (Regjeringen, 2014b). The document states that policies should be based on the "precautionary principle", as well as the Polluter Pays Principle. One of the concrete goals is "the country aims to be carbon neutral by 2050" (Klima- og miljødepartementet, 2012, ch. 1). This goal was later anchored in the climate law which was put in force in 2018. Further the law states that the government has to report on how we are going to reach the goals and assess the climate effect of each state budget (Klimaloven, 2018).

3.2 Norwegian environmental policy

Different types of policy instruments are implemented in Norwegian environmental policy. Legal instruments are prevalent when it comes to protection of biodiversity. The Nature Diversity Act include the principles for management of biodiversity, definition of the different conservation types such as national parks, natural reserves and protected areas and prioritised species (Naturmangfoldloven, 2009). The Planning and Building Act defines the standards for impact assessments and knowledge base when making decisions on measures that might affect biodiversity. Examples of use in climate policy are prohibition of use of fossil fuels for heating in buildings from 2020 (Regjeringen, 2018b) and aiming towards that all new vehicles in 2025 should be zero-emissions (Regjeringen, 2017). The policy instruments of information and infrastructure are also present in the current environmental policy. In the work towards new curriculums for primary schools, sustainable development is introduced as one of three core elements that should be addressed in subjects (Utdanningsdirektoratet, 2018). Development of web pages such as "Miljøstatus.no" by governmental institutions is an attempt to make environmental information easily accessible for the public (Miljøstatus, nd).

[1] White papers (Meld.St.) are drawn up when the Government wishes to present matters to the Storting that do not require a decision. White papers tend to be in the form of a report to the Storting on the work carried out in a particular field and future policy. These documents, and the subsequent discussion of them in the Storting, often form the basis of a draft resolution or bill at a later stage (Regjeringen, n.d.).

Further, infrastructure instruments that promote environmentally friendly behaviour is for example giving support to establishing charging stations (Oslo Kommune, nd).

However, what I will focus on in this thesis are economic instruments. Taxes, subsidies and tradeable quota stand as widely used instruments. As outlined in the theoretical frame, these instruments have often been presented as cost-efficient in comparison to the legal instruments (Helfand, 1999). Adopting cost-efficient policies has been a consistent approach since Norwegian climate policy began in the 1980s, advocated by the two main parties on each side of the political spectrum: labour and conservatives (Boasson & Lahn, 2017). The emphasis on economic instruments and cost-efficient approaches is illustrated by the fact that almost 80% of Norwegian greenhouse gas emissions are either covered by the trading scheme or a tax (Klima- og miljødepartementet, 2012). Subsidies are also important in Norwegian climate policy, through instruments such as the state-funded Enova and the green certificate scheme with Sweden designed for increased renewable energy production and for improving energy efficiency (Boasson & Lahn, 2017). One of these instruments, the tradeable quotas, should be understood in the broader context of economic instruments and environmental trading schemes at the EU/EEC level.

The European Emissions Trading Scheme (EU ETS) was established in 2005 as a tool for the EU states to reach the goals of the Kyoto protocol (Ellerman & Buchner, 2008). The scheme is the biggest internationally of its kind and covers CO_2, nitrous oxide and perfluorocarbons, in the power sector, industry and aviation within the EU. As a result, 45% of greenhouse gases emissions in the EU 28 countries + Norway, Iceland and Liechtenstein (European Commission, nd) has a price. The price on emissions for sectors covered by the EU ETS, depends on the total number of emission allowances set by the EU. In March 2019, the price for a ton of CO_2 was almost EUR 23, but it has fluctuated strongly over time and for the period 2013-2017 it has remained as low as EUR 5-6 per ton (Energi og klima, 2019).

A recurring problem in Norwegian climate policy is that environmental objectives often conflict with other societal objectives such as regional development and distributional issues (Bruvoll & Dalen, 2008). In addition to having targeted policies towards regional development, these goals are also indirectly supported by giving tax exemptions, free quotas, lower CO_2 fee rates and subsidised electricity prices for non-urban areas (ibid).

3.3 Status of green taxation in Norway

3.3.1 Definitions and figures

A consistent definition of environmental taxes does not exist, as previously noted in the theory section, which is also the case with regard to environmental taxation in Norway. Notably, only the income tax, property tax and real estate tax are referred to as "taxes" by the Ministry of Finance (Finansdepartementet, 2018a). Other types of taxes are considered indirect and are referred to as fees. Within this category we find Value Added Tax (VAT), tolls and the so-called excise taxes such as environmental fees, and fees on alcohol, tobacco and sugar. (Finansdepartementet, 2018b). According to the Norwegian Government, the purpose of environmental taxes are to correct the prices of an activity by including the societal costs of a certain economic activity according to the polluter pays principle (Klima- og miljødepartementet, 2012).

The definition of an environmental fee by the official Norwegian Statistics (Statistisk sentralbyrå - SSB) is "a fee that is implemented to correct a negative, environmental effect which is not accounted for by the market actors. They are designed to reduce environmentally harmful activity and internalise the costs arising from that activity" (SSB, 2018b). In contrast, the definition of OECD and the EU is any tax on an activity that can be damaging to the environment. So it is not a requirement for the tax to actually correct for the market failure or intentionally limit the negative environmental impact (Kolshus & Braathu, 2013a).

With this in mind, in 2017, the revenue from (Pigouvian) environmental fees was about 38 billion Norwegian kroner (NOK) or about EUR 3,8 million, which equals to around 5,43% of the government's total tax revenues (SSB, 2018b). If we include all environmentally related taxes like the OECD definition, the figure raises to NOK 76 billion (about EUR 7,7 million euros) and the share of total governmental revenue increases to 10,9% (SSB, 2018a). The figure below shows the composition of tax and fee revenue in 2018. The Pigouvian taxes lies within the 5% named "other fees", while all environmentally related fees would also encompass the electricity fee and fees on motor vehicles.

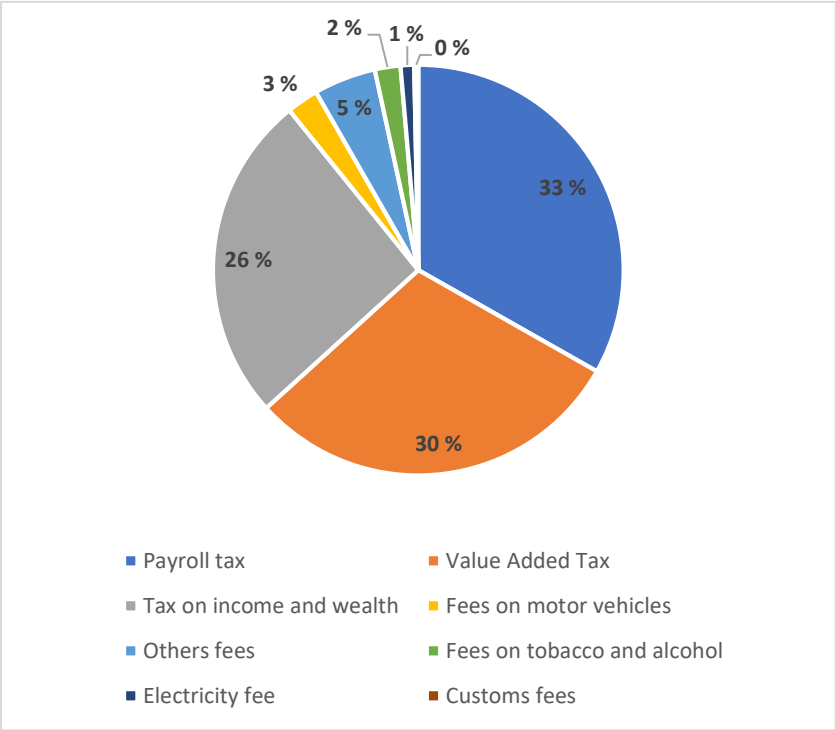

Figure 1 National income from taxes and fees 2018. Source: Det kongelige finansdepartement (2018)

In 2015, 60% of the environmental taxes were paid by industries, while the remaining 40% by the households. The CO_2 fee was mostly paid by the industries, while the fuel taxes were mostly paid by the households (SSB, 2017). SSB did a study where they found that there is a discrepancy of who are responsible for environmentally harmful activities, and who pays the environmental fees. Thus, it is not clear if the fees actually follow the Polluter Pays Principle. A reason for the uneven distribution, can also be due to exemptions for given activities, as well as different points of measuring the fees and the actual emissions (Kolshus & Braathu, 2013b).

3.3.2 Existing environmental fees

Norway was one of the first countries in the world to introduce environmental taxes (Ekins, 1999). The first tax with an environmental implication was the petrol tax introduced in the 1930s, however the motivation was not to reduce the environmental impact, but rather a fiscal one. The first tax with an explicit environmental objective was the fee on sulphur enforced in 1970. Widespread use of environmental taxes as a policy instruments became popular only 20 years later, from the late 1980s (Regjeringen, 2007). Table 1 shows an overview of environmental (Pigouvian) fees and the environmentally related fees, as defined by the OECD, that are in effect as of today.

Table 1 Revenue from environmental and environmentally related fees in 2017

Fee	Pigouvian	OECD	Annual revenue in million NOK
CO_2 fee	✓		7160
CO_2 fee in petroleum industry	✓		5223
Fee on hydrofluorocarbon and perfluorocarbons	✓		429
Non-recurring fee on motor vehicle, estimated CO_2 component	✓		6614
Estimated tax related to EU ETS quotas	✓		564
Non-recurring fee on motor vehicle, estimated NOx-component	✓		340
Fee on NOx emissions	✓		52
Fee on NOx emissions in petroleum industry	✓		7
Fee on sulphur	✓		18
Road usage fee on gasoline	✓		5593
Road usage fee on auto diesel	✓		9924
Road usage fee on natural gas and LPG	✓		4
Fee on lubricant oil	✓		109
Fee on beverage containers – carton	✓		48
Fee on beverage containers - plastic	✓		34
Fee on beverage containers - metal	✓		9
Fee on beverage containers - glass	✓		74
Fee on trichloroethene, tetrachloroethylene	✓		1
Fee on pesticides	✓		39
Mineral oil base fee	✓		1832
Fee on coal		✓	0
Fee on electric power		✓	10884
Fee on electric power to the Energy fund		✓	691
Fees related to industry on Svalbard		✓	4
Natural resource fee		✓	1602
Sector fee when renewing power concession		✓	0
Fee on boat motors		✓	0
Inspection fee on fishing fleet		✓	0
Fee related to underwater natural resource other than petroleum		✓	1
Fee related to exploration and extraction rights of minerals		✓	3

Control and supervision fee in aquaculture	✓	27
Concession fee	✓	782
Fishermen fee	✓	17
Fishermen insurance fee	✓	248
Hunting and fishing fees	✓	86
Flight passenger fee	✓	1828
Traffic damage fee	✓	0
Non-recurring fee on motor vehicles	✓	15886
Re-registration fee on motor vehicles	✓	1474
Tonnage fee in shipping	✓	48
Annual weight-based motor vehicle tax	✓	339
Annual fee	✓	9615
Sector fees to Svalbard's environmental protection fund	✓	20

Source: Own elaboration based on data from the National Statistics Bureau (SSB, 2018a; SSB, 2018b)

In addition to the fees in the table, there are other fees collected at the municipal level, such as waste and drainage fees, docking and port fees, and toll booths. Of these, I will only discuss the toll booth fees later as they are prevalent in the public debate on environmental fees. Depending on the motivation behind each toll booth fee, determines if it is a Pigouvian fee or environmentally related fee.

Of the Pigouvian taxes, the CO_2 fee is the one that generates the most revenue. The fee was introduced in 1991 with the purpose to reduce emissions in a cost-efficient manner on petrol, auto diesel oil, mineral oil (excl. fisheries etc.), and petroleum sector (only offshore activities) (Regjeringen, 2007). As of 2012, the fee covered 55% of Norwegian greenhouse gas emissions (Klima- og miljødepartementet, 2012). However, there are several exemptions from this fee which results in industries paying very differently (Regjeringen, 2018a). The intention of the exemptions is to support for example the industry and fishing activities, so they do not lose comparative advantage in the international market.

The CO_2 fee is approximately NOK 500 per ton (EUR 52). In contrast to many other European countries, Norway has also kept a CO_2 fee for the petroleum industry and for domestic flights even though they are also covered by the EU ETS. This fee is aimed to be lowered as the EU ETS quota price gets higher (NOU 2015: 15, 2015). The petroleum sector faces the highest CO_2 price; the quota price of around NOK 200 and the CO_2 fee of NOK 500 amounts to NOK 700 per ton CO_2 (EUR 73) (Norsk petroleum, 2018).

Secondly, the transport-related fees give the most revenue. Of the transport-related fees, the fuel fees (CO_2 fee + road usage fee) and the CO_2 and NOx component in the non-recurring fee are the Pigouvian taxes. The rates vary depending on how much CO_2 or NOx the fuel type or car emits. For example, the non-recurring fee is paid upon purchase of the vehicle and is a combination of the fee group the car belongs to, its weight, the amount of CO_2 and NOx emissions that the car produces and "engine capacity" (Skatteetaten, 2018). Conversely, if you choose less-polluting cars like electric vehicles, this fee will be smaller as there will be no CO_2 component. This is seen as some of the reasons for Norway having the highest share of EV's per capita (Boasson & Lahn, 2017). The total of the non-recurring fee (with all components) is the environmentally related fee that generates the most revenue. The annual fee and the re-registration fee on motor vehicles also generate considerable revenues.

Other environmentally related fees that generate considerable revenues are the natural resource fee, the electric power fee and the flight passenger fee. The natural resource fee is a ground rent fee related to hydropower (EnergiNorge, nd). It has been debated whether this fee should be expanded also to encompass aquaculture and production of other types of renewable energy like wind power (Ystmark, 2019). The fee on electric energy is said to be environmentally motivated by limiting energy use, but as Norway has a surplus of renewable energy-generated electricity, it is doubtful if it will have any positive climate effects in practice (NOU 2015: 15, 2015). Thus, it is defined as an environmentally related fee instead of a Pigouvian tax. This is also the case for the flight passenger fee that was implemented in 2016. This fee is set to NOK 84 (EUR 8,7) (Regjeringen, 2018a) on top of the flight ticket price, and it is both economically and environmentally motivated. It is intended to reduce the use of aircrafts as a transport method and to give incentives to choose for example train transportation which is less polluting (NOU 2015: 15, 2015).

3.3.3 Ecological tax reform

In 1994, the government established The Green Tax Commission to assess the possibilities of a green tax reform and to achieve the so-called "double dividend". The idea behind the double dividend is that, in addition to reducing negative environmental impacts, the revenues from the taxes could be used to increase the overall social welfare. The motivation from the commission was to evaluate if the green taxes could be used to increase employment and social welfare (NOU 1996: 9, 1996). One of the recommendations from the commission was

to increase the environmental fees on carbon, sulphur and in the transport sector, and to lower the corresponding value of the payroll fee to increase employment.

Another green tax commission was established by the Norwegian government in 2015 to further develop the idea of a green tax reform and to set a price through taxes that reflect the costs of environmental impacts. The main recommendation from this commission was that a green tax reform should be implemented by increasing taxation of environmental 'bads' and then reducing the overall tax level for private persons and companies (NOU 2015: 15, 2015).

The report by The Green Tax Commission gave an overview over existing and potential environmental fees in Norway. Potential expansion of existing fees mentioned in the report include carbon taxes (and removal of exemptions relating to these) in the industry and fees on carbon for sectors outside of the EU ETS to rise to the same level as in the sectors covered by the ETS. Accordingly, the fees on private cars and transportation should be restructured and differentiated to correspond more closely to their environmental impacts. It also suggested an expansion of the sulphur fee to comprise both coal and coal coke, as well as restructuring and differentiating the NOx fee to correspond to the higher environmental impacts in certain geographic areas. The Commission did not give any recommendations regarding the "electric power" fee, or the fees on beverage packaging and pesticides as they were evaluated as fiscally motivated and not Pigouvian fees (NOU 2015: 15, 2015).

Furthermore, the report also proposed new environmental fees. Among these were a fee on methane from red meat production, a fee on nitrogen and phosphorus in mineral fertiliser, a CO_2 fee on land-use change and on emissions from waste treatment, and a fee on interventions in nature by for example infrastructure development. In addition, the report mentioned various activities that should be studied, such as production of goods that contain polyvinyl chloride, fish farming, littering, noise from airports, if they should be subject to a fee (NOU 2015: 15, 2015). From the expansion of existing fees and introduction of the new ones, the commission estimated a potential for an increase in revenues of approximately NOK 25 000-30 000 (EUR 2600-3130) per year, which then could be used to lower the tax level for private persons and companies.

The liberal party, which had the strongest environmental profile of the parties in the government at the time this thesis is written, was a strong supporter of a green tax shift in the

state budget for 2017 (Venstre, 2016). The 2017 budget implemented some of the recommendations by the second Green Tax Commission. A rise of NOK 1,6 billion (EUR 0,16 billion) in environmental fees by the current government, such as higher fuel and CO_2 fees, accounts for the biggest increase in environmental taxation in ten years. This was accompanied by a reduction in taxes for private persons and companies. Car owners were also compensated with a reduction in the annual fee (Finansdepartementet, 2016), which in practice means a reduction on another environmental fee. Consequently, the tax shift partially stayed within the transport sector and whether or not it could be qualified as an Ecological Tax Reform could be discussed. For the 2018 and 2019 State budgets, progress towards an ETR through increased environmental taxation stagnated (Regjeringen, 2018a).

4. Methodology

The methodology section consists of three main parts. First, the process of data collection is described, including the stages of retrieval of background information, the development of interview guide, and the sampling strategy. The second part of this chapter describes the methodology for data analysis. Lastly, validity, reliability and ethical considerations are addressed

4.1 Data collection

4.1.1 Background information

Collection of background information included a literature review of scientific and grey literature, policy documents and media coverage. To review the scientific literature I started with the article by Bernow (1998) on an Ecological Tax Reform, noting down key concepts and searched scholarly data bases for these topics. Grey literature and policy consisted of reports and articles made by organisations, think tanks, businesses and different levels of government, like for example the Green Tax Commission (NOU 2015: 15, 2015). Media coverage on the topic of environmental fees was broad, and publications such as “Fees that work” (Harstad, 2013) and “Climate change: Protecting the poor from green taxes” (Harrabin, 2018) were also used to identify central issues. This served the thesis as the starting point for the collection of primary data, by allowing to identify key informants for the structured interviews and preparing the interview guidelines.

In addition to an expansion of the literature already cited, data from Statistics Norway (SSB, 2017), Eurostat (Eurostat, 2018) and The World Bank Development Indicators (World Bank, 2018) was used in the collection of background information. The collection of background information allowed me to carry out my objective and answer my set of research questions. The empirical data collection served to carry out my second objective.

4.1.2 Sampling method

The sampling method used was purposive sampling. The objective of this type of sampling is to get informants who are relevant for the research questions. The researcher has to have a clear criteria of the informants which could be included or excluded from the sample (Bryman, 2016). To determine who should be included in the sample, I conducted a stakeholder analysis. The analysis aimed at identifying individuals or organisations that are affected or affect a decision or action as defined by Freeman (2010). In this case, the stakeholder analysis identified those who can affect (or cannot) and will (or will not) be affected by, the potential Ecological Tax Reform. This resulted in 4 possible categories illustrated in table 2 below:

Table 2 Stakeholder analysis

	Can affect	*Cannot affect*
Affected	1) those with influence towards the ETR and will get affected by the ETR	3) those without influence over the ETR, but will be affected by it
Not affected	2) those with influence, but will not get affected by the ETR	and 4) those without influence and who will not be affected by the ETR

I chose the second category of stakeholders as the main source of informants for my data collection on the following grounds: I assumed that i) they would have a broader understanding to the issue than the people and organisations affected directly (those in group 1), and ii) that they were better organised and accessible than the ones affected but without influence (those in group 3). The fourth category was not considered to be part of the sample as they would neither have any influence over a process of ETR or get affected by it.

The second category consisting of those who can affect an ETR, but not directly affected by it, includes different levels of government, environmental non-governmental organisations, academia, think tanks and interest groups for the various industries that are subject to environmental taxes. In this way, the individuals and organisations in category 1 and 3 were represented in the sample, although indirectly. For example, interest groups for the petroleum industry, but not the oil companies themselves were interviewed. Another example are environmental organisations who speaks on behalf of the nature and climate as someone who could influence an ETR process, but themselves would not carry the consequences of the taxes.

To make sure I had not left out any important stakeholders, I used a four-step approach to identity groups that would speak on the behalf of affected individuals or organisations. The first step was to start with the environmental challenges we face today and outline the drivers of these. Thereafter, I identified who were behind or "doing" these drivers of environmental degradation, and thus the ones that would be affected by taxes, existing or potential new ones. Lastly, I identified who spoke on the affected behalves.

The stakeholder analysis resulted in five groups of key informants, 1) government 2) academia, 3) think tanks, 4) environmental NGOs and 5) interest groups. When contacting potential informants, I tried to get a representative number of informants from each of the five groups. I made sure that I contacted the right person within each organisation, which gave me reasonably quick responses and if they could not be interviewed, they suggested someone in their place. The first group "government" was the most difficult to get represented. In the end, only two informants represented this group. From academia I had seven informants. Think tanks were represented by the three biggest, politically situated think tanks, in addition to one environmental think tank. Environmental NGOs were represented by five informants, and interest groups by ten informants. Although I was not able to get representatives of all industries that would be affected by environmental taxes, the sample provides a broad range of the various viewpoints. In total I interviewed 28 individuals. See full list of informants and key informant group in appendix 1.

There was a trade-off between giving informants the possibility to speak freely and identifying who held different opinions in the data material. I decided to anonymise the informants to a high degree by only including which of the five categories each informant

belonged to. This allowed the informants to be able to both speak on behalf of the position they held, as well as be able to draw upon personal experience and knowledge,

4.1.3 Semi-structured interviews

To answer my set of research questions, I used a mixed method approach in the design of the semi-structured interview guide. The approach allowed me to get data material consisting of "numbers" and "words", which is often a way in which quantitative and qualitative methods are distinguished (Bryman, 2016). Semi-structured interviews have core guidelines and topics, but are flexible so that the informants can bring up topics and aspects which I have not yet identified in the collection of background information. The flexibility allows the informants to highlight their point of view and perspectives are one of the benefits of doing qualitative interviews (Bryman, 2016).

The interview guide consisted of nine different questions divided into three main sections, environmental taxes, Ecological tax reform and demographic information (see appendix 2). The first part of the interview was based on the following figure with an overview of the current environmental taxes and aimed at answering the first research question of the feasibility of an ETR. An important note to the informants was that the figure shown only include the environmental taxes according to the SSB definition, and not all environmentally related taxes according to the OECD definition.

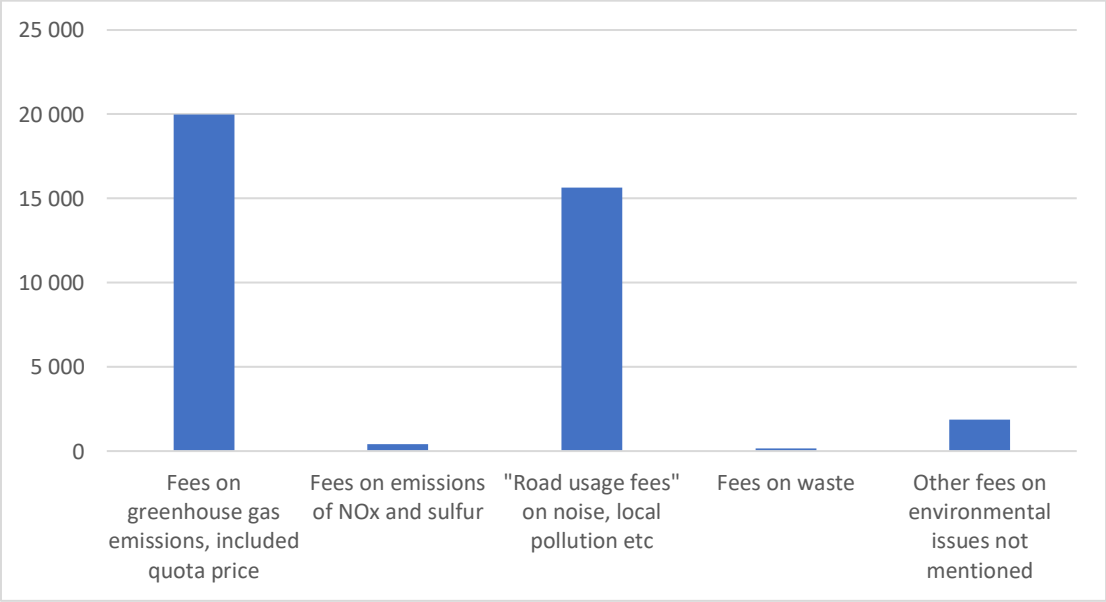

Figure 2 Revenue from Pigouvian environmental taxes in 2017 (in billion NOK). Source: SSB (2018c)

The second section on an ETR was structured around six questions and was aiming to answer the second research question on the operationalisation of an ETR. Some question were straight-forward yes/no questions, and others were open, conversation-oriented questions, thus a combination of both qualitative and quantitative elements in my interview guide. Moreover, doing this creates a nice flow for the interviews (Tjora, 2012) which allowed for more of a discussion rather than "interview"-feeling. Both of the two first sections served to give insight to the third research question of socio-economic considerations of an ETR. The demographic questions were answered in the end by the informants themselves on the questions sheet.

The interviews (n=28) were conducted between the 18th of December 2018 and the 15th of March 2019. The design of the interview aimed at lasting half an hour, but the final timing ranged between 20 minutes and 1,5 hours. The majority of the interviews (n=24) were conducted face to face, mainly in the offices of the informants to give them the comfort on being on their "court" and facilitate their participation. Some of the interviews (n=4) had to be done on the phone due to the unavailability of the informants to meet face to face.

All the interviews were recorded after asking for the informant's consent and the recordings were stored on a password-protected unit. Recording the interviews gave the freedom to concentrate on what the informants were saying, and at the same time follow up if anything was unclear on what they meant and be fully present in the conversation (Berg & Lune, 2012). Afterwards, I transcribed the interviews and wrote down my initial thoughts and notes. The interviews conducted on the phone were not recorded, but I made sure to take extensive notes while they were conducted.

Creating rapport and the researcher's role when conducting the interview is critical (Bryman, 2016). As a student of international environmental studies, my role may have affected how the informants perceived me and answered the questions. For many of the interest groups, environment is not among their top concerns, and knowing my background this may have affected how they answered. In addition, the offices I had available and proposed the informants to use, was at my part-time job at the Zero Emission Resource Organisation (ZERO), so some of the informants also knew that I worked there. As the organisations of the informants may have either quite similar or different views than ZERO, this may have shaped how they responded in both positive and negative way. Some of the informants I had met

before, either through my studies or work at ZERO and thus I had better rapport and a different ambience in those interviews which could have altered the results.

4.2 Data analysis

I conducted a content analysis of the 28 interview transcriptions. A content analysis is "a careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes, biases and meanings" (Berg & Lune, 2012, p. 349).

First, a read-through of the transcripts from the interviews was conducted. The three, major themes were already determined by the research questions for the thesis 1) the feasibility, 2) the implementation and 3) the socio-economic considerations of a potential ETR in Norway. The primary reading of data material served to identify the categories for the further analysis and sort them under which theme they belonged to.

The feasibility was determined by the whether or not there was potential to increase environmental taxation. It was presumed that if there was no room to increase the revenue from green taxes, a reform would not be feasible. Thus, the four main categories were the perception of key informants on 1) increasing the environmental tax level, 2) existing taxes that could be increased and 3) new taxes that could be implemented, and 4) the interaction between taxation and other policy instruments.

An example of a statement that was coded as an existing tax that could be increased was "fees on CO_2 varies greatly. The fee should be higher for agriculture, the industries covered by the EU ETS and fishing. I believe that the fee should be equal for all since the damage of each ton (CO_2) emitted is equal for all the emission sources" (Informant 11). Another view was this:

> *It has been suggested to implement a flat CO_2 fee for industry outside the EU ETS on NOK500/ton CO_2. For small businesses that are not big enough to be part of the EU ETS this may lead to paying off for them to switch from their 10 megawatt gas boiler, and invest in a new electric boiler of bigger capacity to be part of the EU ETS (above 20 megawatt installed capacity is covered by the EU ETS (Miljødirektoratet, nd)), where the carbon price is 3x lower. But for a small business of 12-15 employees this*

may not be feasible even though it may be what they want to reduce their emissions in the long term (Informant 10).

This is an example of a statement coded as do not want a fee to increase. An example of a statement that was coded under the category new taxes was "we should have a fee on nature for when we destroy it" (Informant 9).

The implementation of an Ecological Tax Reform was determined by 1) the deemed potential extent and timeframe of a reform, and 2) how we could use the revenue from green taxes. These two categories were asked about in separate questions and the results sum up the responses. The informants were given the timeframe of 2020, 2030 and 2050, and could tick of which share they saw as desirable that environmental taxes could have of total tax revenue. For the question of revenue recycling, the informants could choose between earmarking, lump-sum transfers, lower tax level for individuals or businesses, and "other". They could choose to tick off more than one box.

The socio-economic considerations were determined by factors the informants mentioned throughout the interviews that could have socio-economic impact as well as a question of what the key informants perceived as barriers and opportunities for a reform.
An example of a statement that appeared outside a question was in the beginning of an interview where the informant stated "Economic instruments are nice in theory, but are very problematic in practice. They have severe distributional and competitive effects" (Informant 24). Distributional and competitive effects were coded under their respective category of the same name in the analysis.

4.3 Reliability and validity

The quality of the research depends on the level of reliability and validity. Reliability is the concept of measuring a variable or concept consistently, whereas validity refers to 1) an internal aspect speaks of whether or not we are actually capture what we want to measure and 2) an external aspect of whether the results can be generalisable (Bryman, 2016).

Reliability in this study refers to whether it is possible to replicate the results if a new research project was to be conducted at a different time and by a different person. The same interview

guide could be used, but if another person, with a different role, asked the questions and the political context has changed, the informants may give different responses. The reliability of the interviews could also fluctuate with the same researcher. The advantage of a semi-structured interview which allows for spontaneous questions, might also have the disadvantage of compromising the reliability by not asking the exact same set of questions to all the informants. This was expected as not all types of taxes were relevant for all industries in the first section, therefore I do not base the results on the first research questions on number of informants supporting each tax, but rather present them as a range of views on possible taxes.

Internal validity is determined based on whether the questions measured what they were supposed to. To assure this, I conducted five pilot interviews to test and tweak my interview guide. These were greatly helpful as they allowed me to see which questions worked in practice, and which did not. I got valuable feedback on how the different formulations primed the respondent, and this gave me the chance to reflect on how to best formulate the questions to give me the information needed to answer my research questions. I decided to make some of the questions designed like survey questions so they could tick of boxes to make the interview more interactive, but at the same time give them the opportunity to expand on their answers. I also included some graphs and figures to give the informants some perspective on the numbers I was asking about. However, the graphs used and information highlighted might have given the informants an anchor and thus given different responses than what they would have without that information. For example, I included a figure on the revenue from environmental taxes in the first section, the taxes portrayed were defined by the strict type of Pigouvian taxes and not all environmentally related taxes (as discussed in the previous chapter). Providing the numbers for the environmentally related taxes, as well as the Pigouvian taxes could have been beneficial in getting more elaborated answers from the informants. Further, in the second section I included a figure showing the environmental tax revenue's share of total tax revenue in OECD countries. In these statistics, Norway´s income from environmental taxes was around 5%, which was below average. While countries such as Turkey and Latvia had around 13% of tax revenue from green taxes. These numbers do not provide the whole picture, as Norway might pay more per capita and have a larger tax burden in general. I provided the informants with these facts, and seeing as the topic on how the tax system is designed is a very complex topic, I do believe it was helpful for the informants, as few of them had the structure of income from various taxes on top of their heads.

External validity can be seen in whether or not the results are transferable to other settings. For this study, the results that are true for the case of Norway in regards to environmental taxation, might not be transferable to other countries with other macroeconomic conditions and different characteristics of society as a whole. Consequently, the robustness of external validity in this study is not absolute.

To increase validity in a study, triangulation can be done and is referring to when the researcher uses different techniques to study the same phenomenon. The idea behind is that if we get the same results through different approaches of studying the same issue, we are closer to the accurate reality of a phenomenon (Berg & Lune, 2012). Using a mix of qualitative and quantitative questions allowed me to better understand the statements of the informants on the narrower questions by following up and asking them to elaborate. At the same time, closed-end questions could confirm when the informants had long trains of thoughts and arguments. Even though there are challenges when using mixed-methods and they are not superior to using a quantitative or qualitative approach alone, I argue that in this case, elements from both methods enriched the data. Ideally, this study could have included other techniques such as more extensive text analysis of relevant documents or quantitative surveys to corroborate findings, however, due to time limitations this was not feasible.

4.4 Ethical considerations

Ethics are prevalent in all sorts of data collection in terms of whether the researcher takes into account the informants needs and concerns, and thus the researcher should ensure that there are no negative consequences for the informants (Banks & Scheyvens, 2014). The thesis proposal was submitted to the Norwegian Centre for Research Data (Norsk senter for forskningsdata - NSD) on the 7th of august 2018. NSD deemed the project in need for registration and was approved (the receipt can be found in appendix 3). The recommendations from NSD were followed throughout the stages of data collection and analysis. Informed consent was obtained from all participants, and it was stressed before the interviews that they at any time could withdraw from participating, that their privacy would be respected by anonymising the data and that all information would be stored on password-protected units. They were also informed that they could ask for all the information kept on them at any point, and that it would be deleted immediately upon request by the participant.

Another ethical aspect concerns reciprocity, as given the informant's time commitment during the interviews it is important to evaluate how the researcher can communicate the results of the research back to the informants (Banks & Scheyvens, 2014). After submitting the thesis, I will write a summary of my findings which will be sent out to the informants.

5. Results

5.1 The feasibility of an ETR in Norway

As described in the methods chapter, feasibility of an ETR is determined by the perception of the current environmental tax level, and if there is a potential of increasing environmental taxation, either through existing taxes or implementing new ones. And lastly, the relation to other policy instruments. The findings suggest that there is room to increase the share of environmental taxes of total tax revenue, and that this increase can happen through both increasing existing taxes and implementing new ones. The use of environmental taxation has to be seen in light of how the taxes interact with other policy instruments.

5.1.1 Perception by key informants towards rising the environmental tax level

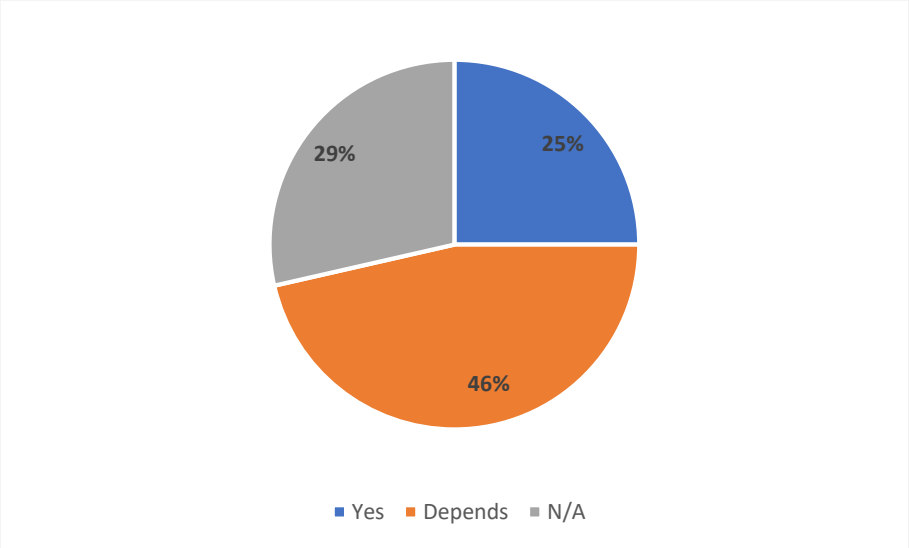

Figure 3 Share of responses to whether we could increase the environmental taxation level

Regarding the perception of the current environmental tax level, obtained responses were either that environmental taxes' share of revenues could increase (n=7), that the share could increase, but not because we want more revenue, but rather that the environmentally harmful activities are currently not priced correctly (n=12), or informants did not want to answer this

for different reasons (n=9). It is noteworthy that no informants answered directly no, but it is plausible that of the informants that did provide an answer, it could have been their opinion that we should not increase the environmental taxation level.

Of the informants who stated that we should have a higher percentage of tax revenue coming from green taxes, the common position was that environmental taxes are not used "enough" as a policy instrument and that there is no doubt that they should be higher.

When it comes to the informants who stated that the share of revenues depends on correct pricing of the environmental harming activity, implicitly endorsing a market approach to set the level of taxes, for example the following reasoning was offered: "Whether the environmentally related taxes should stand for a bigger share of the revenue, can only be justified if they are currently priced lower than the costs of the damages they generate" (Informant 8). Another informant said:

> *If one were to comment on if the environmental tax level is too high or low, one has to look at whether the current level of each tax actually induce changes! Does a NOK 500 per ton carbon change behaviour? What are the abatement costs in a given sector? If the abatement costs are NOK 1000, and the fee remains at NOK 500, we will not get a behavioural change and the fee only has a fiscal effect* (Informant 4).

The majority of informants that stated "depends", were under the impression that economic activities are currently not priced to internalise the marginal environmental costs, thus the level should be higher. On the flip side, this would mean that if all externalities were correctly priced, the informants would have suggested that the level should not increase. However, there was also one informant (Informant 26) who proposed an alternative to the externality reasoning and argued that one could set the tax level according to which goals and commitments are defined. For example, one could calculate which carbon price is necessary to achieve the Paris goals, and then set the tax level accordingly.

An informant who did not want to answer how the overall taxation level should be, did have a comment to the taxation level for her industry and that we need to look at each sector separately (Informant 7). She held that their industry already paid taxes designed according to the Polluter Pays Principle, and thus should not face higher taxation. Of the other informants who did not answer, the reasons were either that the organisation did not have an official opinion on this, or that it was a political question.

Table 3 shows through which taxes the environmental tax level could be increased. As explained in the methods chapter, results from this section of feasibility is intended to provide the arguments for and against by the different key informant groups related to the different taxes, rather than provide a definite answer to which taxes should (or should not) be implemented. However, the overall research suggested that there is sufficient potential for increased taxation to make a reform feasible.

Table 3 Selected taxes that could be increased or implemented

Existing taxes that could be increased	**New taxes that could be implemented**
Fee on CO_2 emissions	Fee on methane emissions
Fee on road use incorporated in a new "road pricing" system	Fee on nitrogen in fertiliser
Fee on NOx emissions	Fee on peat
Fee on aviation	Fee on nature and land-use change
	Fee on dumping of waste from mineral activity
	Fee on plastic

5.1.2 Existing taxes that could be increased

My research suggests that there is a potential to increase some of the existing environmental taxes, namely the CO_2 fee and transport-related taxes on motor vehicles and aviation as shown in table 3.

CO_2 fee

(N=14) informants stated that the CO_2 fee should to some degree be higher. The tendency was that academia, NGOs and think tanks stated that they want an increase or a flatter fee. Typically, representatives from industries that are subject to the fee, want a differentiated CO_2 fee. None of the informants seem to believe that the CO_2 fee will decrease, but rather that it will go up. Although not everyone sees this as desirable, there seem to be at least acceptance for a slight increase in the CO_2 fee among all informants.

Still, the majority of CO_2 emissions are not covered by a tax, but rather the EU Emissions Trading Scheme. Thus, some (n=4) informants referred to the quota price as a "fee" the industry faces, meaning that they see this as a tax and therefore commented on it during the interviews. Therefore, I will first go into some of the arguments related to the quota price on CO_2 before going into the specific CO_2 fee.

Informants from the interest groups for EU ETS covered industries, endorsed that the quota price should be set by the market, and they were aware that the price will go up. However, they argue that the price should not be increased to an "unreasonable" level as it will negatively affect the industries prone to carbon leakage outside of Europe. Despite this notion, the set of informants remained positive to the current pricing system as a sound environmental policy and praised it for being predictable for the industries.

On the other hand, informants from environmental NGOs and academia criticised that the current EU system is not working due to a low quota price. They held that the current price has been too low to actually encourage change in behaviour. This was also agreed upon by some informants from the interest groups, and there was consensus that now when the number of available quotas have been reduced and the price has increased, it is more likely that the system will encourage change.

In contrast to most of the other countries that take part in the EU ETS, the carbon emissions of two sectors in Norway, the offshore industry and aviation, are covered by two different economic instruments: the carbon trading scheme and the CO_2 fee, which informants from these two sectors emphasised. The two informants called for the need to see the CO_2 fee in light of the quota price set in the EU ETS and to fix the level accordingly. They claimed that the EU quota system works and that it should be the only instrument targeted to reduce emissions. An additional fee to the quota is not something the sectors want, argued the informants, and it is seen as unfair compared to the same industries abroad which do not have this disadvantage. For example, Informant 7 highlighted that any increase in the CO_2 fee would leave the Norwegian industries worse off and give them a disadvantage in the global market. In turn, this would, according to this informant, lead to less local production and free up carbon quotas which then could be bought from other countries with more polluting industries.

In relation to the CO_2 fee on domestic aviation, an informant from a think tank argued that regional agreements should be made to avoid comparative disadvantages between competing airports. Gardermoen airport in Norway, Arlanda in Stockholm and Kastrup in Copenhagen compete for the same departures and if all flights from these airports set the same tax on flying, a lot of the emissions from this industry in the Nordic countries could be reduced. Further, he emphasised that it would be absurd that an industry with such a significant contribution to the problem, face a very small price (the quota price which is currently set at EUR 23), while for example private transportation faces high taxes (Informant 5).

An informant emphasised that in "The climate conciliation" (explained in the case chapter), there is a formulation that says we have to look at the quota price and CO_2 tax in relation to each other. However, it is not detailed how this should be done (Informant 26). He held that this may indicate that as the quota price gets higher, the additional CO_2 fee might decrease for the two industries.

The CO_2 fee on emissions outside the EU ETS is present in transportation, in buildings and construction, and in smaller industries not covered by the trading scheme. Informants that talk on behalf of these industries, private car driving (n=3) and smaller industries (n=2), were especially prone to argue that the current tax level does not promote changed behaviour and in many cases work as a fiscal tax.

An informant from the bureaucracy, mentioned that in the new government platform, we got a political signal for the first time on the expected increase in the CO_2 fee. Each year the fee will increase 5% increase until 2025 from next year. He estimated that this will give about NOK 680 per ton in 2025 (EUR 70,8). This is a clear message to the economic actors of what they can expect, and it is positive that a government which usually is not a fan of fees proposes such a rise. On the other hand, an informant from an environmental NGO suggested that we should implement a price of NOK 1800 per ton which is what is needed to promote changed behaviour. A third informant from a think tank had done calculations on which price is needed on CO_2 to reach a 40% reduction of emissions outside the ETS. He found that the price would have to be NOK 4800 per ton, which would imply a NOK 10 rise in fuel taxes. He added that "this is of course politically unfeasible, but good to have in mind when we are discussing what level the tax should have".

Transport-related taxes

When it comes to the transport sector, the CO_2 fee and road usage fees were the most discussed. The main findings from my analysis was that informants believed that these transport-related fees on car driving should increase, but they need to be designed to limit negative distributional effects and a dynamic "road pricing" system was a proposal on how to do this. Although many argued for a higher carbon price like already discussed, there were informants that stated that in relation to fuel taxes we should not increase them uncritically even though the externality might not be correctly priced. The fuel taxes were by many informants perceived as having reached a certain limit due to public resistance to them, and that a new pricing system should be implemented.

Road pricing was one of the suggestions from the Green Tax Commission, and is a way to integrate the different negative effects car use has. (N=8) informants across the key informant groups stated that this system will be more just and targeted in comparison to the current tax system. The system can cover both the fossil fuels, road wear, queues, noise, local emissions and the damage caused by *when* and *where* one drives.

Informant 21 held that the fuel taxes cover only the cars with combustion engines, but include the price of queues, noise and local pollution. The zero emission vehicles are exempted from these since they don't use conventional fuels, but contribute as much to other problems related to car use. Therefore, we should have a dynamic pricing that can also take into account when and where the car is driving, in addition to which technology they have. The privacy issues of tracking everywhere the car goes has been deemed by The Norwegian Data Protection Authority to be solvable and Norway could develop a system and profit from exporting it. Yet, she stated that more research on how to implement this needs to be done, as the price of how much it costs to go a certain place will be volatile due to for example when it is traffic. Another objection has been made by the Progressive party that this is just a way to "unnoticeably" turn up the taxes she further emphasised.

Another informant from a think tank stated that although turning up the taxes is one of the purposes of the new system, the point is that this will be done in a less arbitrary way and more targeted to the actual damages caused by driving. Whether you live exactly outside or inside of a toll booth area, can entail a big price difference for a single person, while the damage generated is very little whether or not you drive from just outside or inside of the toll booth area. Further, the system can take into account distributional effects.

The parliament has already recommended that road pricing should replace the current toll booths, but informants suggested that also the road usage fees should be included. Expanding it to include non-usage-dependent fees such as the annual fees is not perceived as desirable by two of the informants. The road pricing system should only include the usage dependent fees (Informant 5 and 21).

Informant 5 held that reducing environmental impact from fossil fuels can be done with a combination of bans and fees, like we did on fossil heating. There was introduced a ban on fossil heating from 2020, but until the ban is in effect, the fees have been steadily increased. At the same we subsidise alternatives such as electric heat pumps. We can compare the policy of a ban of sale of combustion engine cars from 2025, higher fees for more polluting cars and

subsidies on electric vehicles. However, we should raise the fees on fossil fuelled vehicles so that there is room to also implement them on electric vehicles in a couple of years. He further stated that this is necessary to both meet the loss of revenue when more will switch over to zero emission vehicles, and at the same time maintain the comparative advantage for them over fossil fuelled vehicles.

The CO_2 fee is already differentiated in several areas, but the tendency is that it is becoming a more and more flat fee. Representatives for a couple of industries argued for a differentiated CO_2 fee on for example fuels. An informant stated that a few years back LNG (Liquid Natural Gas) had an exemption of the CO_2 fee which made industries invest in ships fuelled by LNG. Now that the CO_2 is increasingly a flat fee, the technology loses its comparative advantage and thus the industries argues for keeping this through a lower fee (Informant 16).

A CO_2 fund is proposed for industry related transport by a few informants (n=4) representing such industries. It is an initiative (and alternative to a flat CO_2 fee) from the industry to reduce environmental impact from their transport. They argued that we had success with a similar fund for NOx emissions, which lead to a reduction of these. The idea is that the CO_2 fee the industry pays can go directly into a fund the industry manages. They emphasise that the fund has to be used to cut an agreed percentage of emissions, through for example subsiding switching technologies.

Other informants from an environmental NGOs and academia stated a problem with such a fund, because instead of paying for the actual costs the CO_2 creates to the state, they pay it to "themselves" in the fund. In that way, they argue that the polluter pays principle is not maintained. An alternative that the critics of such fund propose, is that the industry continue to pay the CO_2 fee, but we increase the fee and then only the increased revenue goes into the fund which the industry itself can manage and use to transition to less polluting alternatives.

Although the NOx-fund is used to argue for a CO_2 fund, some informants claimed that the fee the industry is paying to their fund for the NOx emissions is insufficient and should be increased. An informant from a think tank held that instead of being designed as a tool to induce change, it is a way of favouring some sectors over others. Informants from interest groups highlighted the NOx fund as a successful policy tool.

The flight passenger fee is one of the fees that were not included in the graph shown to the informants. It does not fall under the SSBs definition of an environmental tax, but rather the OECD definition of an environmentally *related* tax. Although there were diverting opinions

on the fee, the majority of informants believe that we do not pay enough for flying compared to the amount of emissions it contributes to. An informant from a think tank argued that the fee was introduced to balance the state budget and that the NOK 83 are not high enough to change behaviour, and thus only is fiscal. If one implements fees based on environmental reasoning, but cannot show any actual environmental effects, this reduces the legitimacy of the policy instrument she further emphasised.

Another informant from academia held that since the geography of the country is as it is, many do not have an option to flying certain distances. And that the fee should be differentiated depending on whether you fly short (national) or long distances (out of Norway). In spite of the objections to this fee, there might be room to increase the price of flying based on environmental reasoning. Whether this should be done through an increase of the flight-passenger fee with a length-of-flight component needs to be further investigated.

5.1.3 New taxes that could be implemented

Of the new taxes that were suggested, the majority (n=10) discussed fees in the agriculture sector. Secondly, a fee on nature or land-use change was also commented on by several informants (n=5). A couple also mentioned a fee on waste from mineral activity and on plastic. Not many had proposals for potential taxes unless there was a tax that had been proposed in their industry, or we discussed the ones proposed by the Green Tax Commission. The research suggested that there is potential for a couple of new environmental taxes, but they need to be carefully designed before implementation.

Taxes in the agricultural industry

The majority of informants that discussed new taxes (n=10) pointed at the agricultural industry as a sector that does not pay for the environmental costs it creates. Most of the emissions from this industry does not have a price and therefore it has been suggested to implement some new fees. However, it was pointed out that there are other processes and rules that regulate how this industry cuts greenhouse gas emissions (informant 26).

As the agriculture industry stands for the majority of methane emissions through meat production, a tax on red meat was proposed by (n=7) informants (which was also proposed by the Green Tax Commission as described in the case chapter). From the research, it seems like there is a consensus that the agriculture industry should to a higher degree internalise the costs of the methane emissions it generates, expect for the informants from this industry. This could

be done through a tax, but a careful design is needed to maximise the precision and effectiveness of such a tax. The industry itself is not in favour of introducing such as tax. Concerns that a tax might lead to higher imports of red meat and hence "methane leakage" were raised. An informant suggested that to reduce this risk, one could also set a tax on imported meat.

If one should design a tax, a key issue is where in the production or consumption process to implement it. It could either be done on the production side (on how much methane each cow generates) or the consumer side (x NOK per kg red meat). There are problems related to both approaches and an informant from academia explained it like this:

> *Determining how much methane each cow generates is very difficult, and thus setting a tax on the production side is very complicated. While, if a price is set on the consumer side, whether some farmers improve their production and decrease their emissions, this will not be reflected in the price. They will all be subject to the same tax and thus the incentive to reduce emissions disappears. It is easier, but does not reduce the problem (Informant 18).*

Another issue is how the farmers can adapt to the new tax. On one hand, an informant argue that they can move their production from meat production to for example grains. Another informant from an agricultural interest group held that most of the land is best suited for grazing and that there is no alternative to grow crops on the same land. Another point made, was that instead of introducing a tax, one could just remove some of the subsidies to the industry. Related to the subsidies given to agriculture are the other policy goals of preserving the industry which a tax on red meat would conflict with. Informants that represent the agriculture industry, did in general not want biological processes to be subject to a tax. They see this as an unreasonable tax base and that other policy instruments should be used, if any at all.

Some informants (n=4) stated that we should re-introduce a tax on nitrogen originating from agriculture. An informant from academia elaborated on that Norway previously had a tax on nitrogen which was removed in the 1990s. A second informant from an interest group for agriculture claimed that it was removed because it did not have any effect on the consumption of fertiliser due to the vitality of this input in agriculture. N_2O is a significant contributor of the greenhouse gases, thus many informants suggest re-implementing the fee. However, implementing a precise fee seems costly:

> *"Predicating the external costs gets harder when the distance between cause and effect gets longer. This problem gets very clear when it comes to nutrient runoffs (such as nitrogen) as the calculation has several "steps" that needs to be examined to determine the actual effects. It is possible to calculate them but you need a lot of information on the amount of nutrients used, the area where the runoff takes place and to which waterway it goes to. The effect is highly geographically determined" (Informant 25).*

Another informant stated that the fees that try to achieve the goals of less environmental impact from the agricultural industry, might collide with other policy goals, such as "regional settlement". This can make it challenging to implement such fees, even though the effects from climate change (which the industry contribute to) can give large social costs in terms for themselves.

A couple of informants suggested a CO_2 fee on peat. An informant from an environmental NGO explained that wetlands are great for flood control, have rich biodiversity and hold a lot of CO_2 which the withdrawal of peat compromises. The issue whether one should tax the input or output is central like for a fee on red meat. Alternatively, she stated that a prohibition has been proposed to reduce withdrawal of peat and the environmental degradation the activity it contributes to.

A fee on nature or land-use change

Informants (n=5) were positive to the idea of having more policy instruments to protect land from being developed and supported the idea behind a fee on nature or land-use change, but there were also various objections to such fees. An informant believed that if we want some areas to remain pristine, a price mechanism might not be the way to go. If we actually want the tax to halt development of certain areas, the price has to be infinite. However, it was stated that for some areas where we only want the concern of pristine nature to be weighed up against the other potential use of the land, a high tax could be desirable (Informant 13). Another informant stated that if it is inevitable to develop some areas, at least there should be a higher price so there is an incentive to look for better alternatives that give less environmental impact (Informant 23). The proposal by the Green Tax Commission was to make a fee on nature differentiated depending on the characteristics, and where the areas were. This is a good idea, but it will be very hard to estimate and dimension the fee (Informant 19). Another issue that was raised, was the potential of setting the price too low and it is crucial that this policy tool is used in combination with existing policy such as laws

and regulations (Informant 9). One called for a value-based discussion and arguments instead of price mechanisms (Informant 15).

One of the informants (Informant 11) had done a study on how big a fee on nature should be to change behaviour and the estimates from the studied sample was between NOK 18/m^2 and NOK 22339/m^2 (EUR 9,6 and EUR 2326). The big range reflects how the project characteristics influence the needed tax level.

The responses from the informants suggests that it is desirable to implement a fee on nature or land-use change for various reasons. It is impossible to avoid loss of all pristine nature, and implementing a fee could increase incentives to go for areas that are less vulnerable. At the same time, it will make the ones responsible for loss of land accountable and provide revenue that could be used to for example restoration and compensation of the loss elsewhere. However, it is emphasised that this should not be the only policy tool to reduce loss of land, but rather complement existing policy measures. It needs to be further studied how to design these types of fees to achieve the desired effect.

Dumping of waste from mineral activity

The informants (n=3) that commented on a fee on waste from mineral activity, were very positive to such a fee. They held that a fee would incentivise better use of the waste which would lead to less waste and improve the used technology (Informant 17). He further stated that some of the parties in parliament proposed an assessment of such a fee, but it was downvoted by the majority.

A fee on plastic

A minority of informants from academia, an NGO, think tank and the industry (n=4) stated that we should implement a tax on plastic. One informant held that plastic is a "hot topic" and that instruments are needed to limit the pollution by this material. A fee is one way to go, but prohibitions and measures on the waste treatment side is highlighted by another informant as opportune.

5.1.4 Interaction with other policy instruments

Although other policy instruments only were deemed superior to taxes by (n=5) informants, (n=20) informants did mention other policy instruments that should deal with given environmental issues. On the basis of this research, the characteristics of each environmental challenge should be scrutinised, along with the goal of each measure to make sure we implement the correct policy instrument. There was no pattern of which other policy

instruments the informants favoured, but below follow some examples of which issues could be dealt with by other instruments.

One informant stated that to reduce the need for transport, city planning is a key policy tool. Environmental impact from transport can be greatly influenced by how one chooses to plan a city (Informant 19). Another informant from a think tank mentioned the building code as central in order to set standards for environmental impact from buildings. Further, demands of using best available technology is seen as superior to taxes in some sectors from the industry side (Informant 4). On the individual level, informant 15 argumented that we should rather do information campaigns, education and norm building. Lastly, the "oil tax regime" is mentioned as way too beneficial for the oil sector, that we are directly subsidising oil production and before we do anything else with environmental policy, we have to look into how we are incentivising petroleum activity (Informant 17).

5.2 Implementation of a green tax reform

Implementation of a green tax reform was determined by the potential extent (share of total tax revenue) and timeframe deemed possible for a reform and how to use environmental tax revenue. Although the majority of informants held that we could increase the share of environmental taxation like assessed related to feasibility, few informants provided a possible scenario for to which degree and when this could happen. Informants rather emphasised that the environmental taxes should be designed to discourage a given activity, than focus on the revenue. This view is also reflected in the opinions towards how we should use the revenue. There was not consensus among the respondents that we should intentionally shift the tax base towards environmental "bads", but use the revenue to increase acceptance and legitimacy of the policy instrument in some way, rather than reducing other taxes.

5.2.1 Extent and timeframe of a potential reform

Although many favoured a higher share of the tax burden on environmental harming activities (n=19), very few indicated a preferred scenario for a tax shift (n=9). The question on an extent of a tax shift was perceived as very technical, and few felt like they had the capacity to answer it with scientifically grounded reasoning and that there was no official viewpoint on the matter in their organisation.

Of the ones that did answer, the highest estimate in 2050 was 50% and the lowest was 0%. The reasoning behind the former was that we should have a steady increase on all environmentally harmful activities, while for the latter the argument was that because by

2050, we should have managed to stop the environmentally harmful activities, and thus have nothing to tax stated three informants from NGOs. The informant that assumed 50% of tax revenue coming from environmental taxes, emphasised that it is important to examine what each change in percentage actually will this mean. For example, what will be the effect on bread prices? How will it affect people of lower income groups? (Informant 24)

Of the other informants that did not provide a preferred scenario (n=19), one of these stated that it is not necessarily the exacts percentages of a tax shift that is interesting, but rather what each percentage means in practical terms and what we need to know in order to determine what each level implies (Informant 25). The most common argument was that even though informants were in favour of an increase in green taxes, we should not intentionally base our welfare on a tax base we wish to get rid of (if we follow the Pigouvian definition of an environmental tax). One informant stated that 'I want low revenue from green taxes if it means that we have a small amount of environmental harming activities. She further noted "that the tax revenue and level need to be seen in light of whether we increase the level for each fee, or whether there is changes in the activity/consumption of the taxed good or service" (Informant 28).

5.2.2 Use of revenue from the environmental taxes

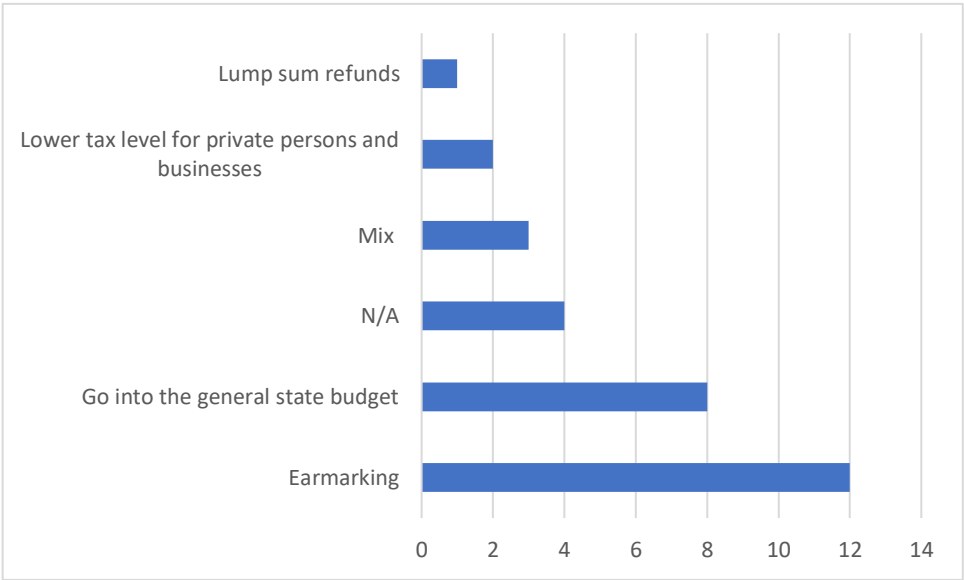

Figure 4 Responses to how to use environmental tax revenue by (n) mentions

Figure 4 shows which types of revenue recycling the informants saw as desirable. All informants (n=28) discussed at least one of the different ways of revenue recycling. How informants indicated they wanted to use revenue from the environmental taxes emphasised

that the majority did not want the revenue to be used in a revenue neutral way, but rather to increase legitimacy and acceptance for the policy instrument in one way or another.

Earmarking was the option that got the most backing by (n=12) informants who stated that this was the way we should spend the revenue. (N=8) informants chose the "other" option with the main argument that government revenue should be spent where it is best used or that it is a political decision. (N=3) informants stated that a mix of the above is beneficial either for the environment or society as a whole. Only (n=2) stated that they wanted the revenue to be used to reduce the overall tax level for individuals or businesses, which is what is suggested by theorists proposing an ETR (see Bernow et al., 1998). One informant (expect the four who stated a "mix" was best), stated that giving back a lump sum transfers to the population or per capita pay-out was the way we should use the revenue. There was (n=4) informants that did not provide a clear answer to this question.

Among the informants that stated "earmarking" as a way we should use environmental tax revenues, there were some that explicitly noted that earmarking does not have to happen in a 1:1 ratio. An informant stated this:

> *"The problem with earmarking is that one should design each public spending after where they give the most benefit. If we should spend NOK 10 billion on research and development, we should not limit the spending to NOK 8 billion, or overspend with NOK 12 billion just because that is the revenue we get from green taxes. One should dimension the spendings after the need and not the source of revenue" (Informant 18).*

Although not everyone stated this explicitly, the research suggested that whether one wants earmarking for technology development, subsidies or green funds, the amount should not be spent based on the revenue. It should rather be earmarked in some way that speeds up the green shift. One argument for earmarking was that if the public sees that the green taxes they pay go to tackle environmental challenges, it would increase the legitimacy of the policy instrument. An argument against was that even though people in theory likes earmarking, in practice they might still see it as unfair as they will not directly benefit from the earmarking stated informant 25. If for example the revenue is used to build renewable energy, a household will not benefit directly from this, but only face a higher fuel tax.

Among the informants who wanted another type of revenue recycling, the most common argument was that the money should go into the general state budget and then be subject to an overall assessment of where the revenue gives the most utility. Arguments such as "it is a

political decision where they money is best spent" was common. To deal with distributional issues, using the current progressive income tax was one approach suggested.

The informants that believed a mix of the different types of revenue recycling was best, argued that it depends on which fee or tax we are talking about and which sector it affects. The revenue should be used in a way that both generates legitimacy and induces change.

The two informants that agreed with the theory and stated that the revenue should be used to reduce distorting taxes, argued in line with the theory that due to the tax interaction effect the real wage for individuals and surplus for businesses is lower when they pay more in green taxes. Then if we lower the other taxes they face, they get incentives to shift to more environmentally friendly behaviour. As previously stated in the case chapter, the revenue neutral reform started in 2016 was revenue neutral within the transport sector. When asked about opinions on this reform, half of the informants (n=15) stated that they did not want this type of revenue neutral reform within the same sector. Interestingly, a set of informants (n=6) stated that they wanted a revenue neutral reform, which deviates from the (n=2) that wanted to use the revenue in a revenue neutral way. These results may imply that there is a wish for a reform, but that the concept of revenue neutrality is understood ambiguously. The research indicated that what is actually seen as desirable is an environmental fiscal reform, where the revenue from green taxes does not lower other taxes, but rather increases the overall revenue.

Even though there were only one informant who wanted lump sum transfers to individuals or per capita pay-outs, many discussed the idea behind this type of revenue recycling. An informant from an environmental NGO emphasised that in theory this is a good way to meet distributional issues, but in practice we might end up with a situation where low-income families transfer money to high-income families. He gave the example that families that can only afford fossil cars and has their yearly trip to Spain pay a large amount of green taxes, while families that can afford electric vehicles and two cabins pay a small amount of green taxes, but still get the same transfer as low-income families. An informant from academia highlighted that in countries with few green taxes and low acceptance might benefit from lump sum transfer, but in countries like Norway, we do not "need" this type of revenue recycling to the same degree. If one were to recycle revenue like this, one needs to ensure that the intention of improving distributional effects are maintained.

The four informants that did not provide any answer discussed the different revenue recycling ways with the arguments above, but did not want to define which way they would want the revenue to be spent.

5.3 Socio-economic considerations

The socio-economic aspects, that could either work as a barrier or opportunity for a reform, identified in the analysis were five factors 1) distributional issues, 2) competitiveness of the industry, 3) the broader political context, 5) environmental awareness and 5) the bureaucracy.

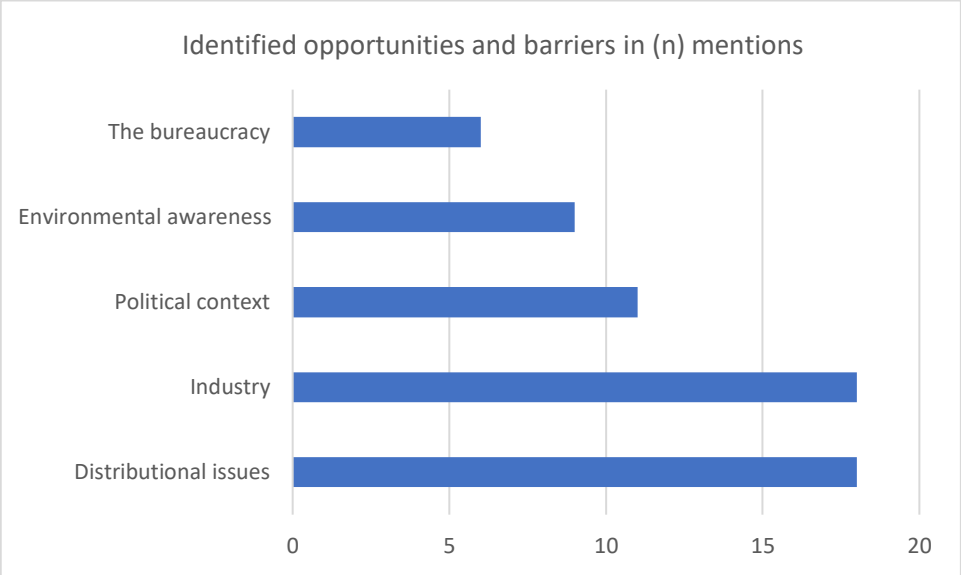

Figure 5 Socio-economic considerations by (n) mentions

5.3.1 Distributional issues

The majority of informants (n=18) raised distributional issues as a central barrier when it comes to environmental taxation. An informant stated that "there are two types of distributional issues, one social and one geographic. It is interesting that it is only recently that the perspective on distributional effects came into environmental politics (…) and that it is crucial that we find a model for a just transition" (Informant 23).

Fuel prices and toll booths are especially mentioned as policies that give unwanted social effects. Informants suggested that the toll booth rebellion in Western Norway and the yellow wests are reactions to policies that are unfairly designed. Many are dependent on cars and driving to make the end meets in their daily logistics, and as fuel taxes and toll booths are flat taxes may be the reason for why they are currently unfairly designed. This seems especially relevant when it comes to people living in more rural regions. The research suggested that the

geographic type of distributional issues appear through the fact that there are less alternatives available outside big cities and a bigger need for travelling distances by cars or planes.

It is interesting that no informants mentioned other taxes described in the case chapter in relation to distributional issues. It may indicate that the other taxes are not seen as controversial, or felt to a lesser degree by the affected. It can also be due to the fact that most other taxes affect the industry, and thus not directly affect the general public.

What the responses from the informants indicated, was that the only way we can continue to use taxation as environmental policy, is if we manage to design taxes in a way that at least do not worsen social injustice. An informant put it this way: "economic instruments work, but they have some side effects. These instruments also need to take into consideration the distributional effects they create, and not only leave it to other policy instruments" (Informant 5). Another informant stated that

> *"We <u>have</u> to consider distributional effects in environmental politics. Implementing environmental policies that people get annoyed with will make them vote for parties that are willing to reverse those policies. Although we need to take the advice of economists when it comes to efficiency, we need to draw on several disciplines to make policies that will actually work in the society they are implemented into" (Informant 2).*

This position reflects the informant's view that even though the economically "best" solution is to reduce distorting taxes, the informant also stated that "the policies need acceptance and legitimacy with the people" and suggested using the revenue in a way that generates legitimacy (Informant 2).

5.3.2 The industry

The majority of informants (n=18) also stated in some way or another that it is important that the competitiveness of the industry is taken into consideration when designing taxes. If not, it will be a great barrier to further increase environmental taxes and to implement new ones.

Representatives for sectors prone to carbon leakage, or other types of industrial flight, stated positions such as that we need to consider the fact if we introduce too stringent regulations the businesses cannot deal with, they could either be shut down or moved abroad.

The concerns for the industry not to lose comparative advantage, were also justified by keeping jobs. One informant held that some parts of the environmental movement is too

narrow-sighted. Like what we do here in Norway is what is most important when it comes to reducing emissions. Some have understood that some things are actually best to produce here where we have the technology that allows to do it in the most environmentally friendly way (Informant 16). The economy is also dependent on the industry for jobs, and we could use our competence from for example the offshore industry to build up new industries such as offshore wind. To cut off one of the legs that can be an important contributor to the transition is not smart, he further stated.

This position can in some cases also reflect a concern towards distributional issues as the informant stated that to keep jobs, we need to have a competitive industry. If the industry shuts down due to too stringent regulations, we will also lose jobs which again will lead to social unrest if employees do not have any alternative to go to.

A minority of informants (n=3) also stated that if we manage to create an alliance between the industry, environmental movement and politicians, the industry could be a driver in the green transition.

5.3.3 Broader political context

(N=11) informants stated that the current political context is a barrier to increasing and implementing new taxes. Due to other reasons than environmental concern, we have a conservative government, and one informant from a think tank highlighted that one of these went to election with promising less taxes in the transport sector, while another is mainly concerned with tax reliefs. Some of the informants also held that it is unlikely that we will be able to see a big increase of green taxes before, possibly, a new government is formed in 2021.

5.3.4 Environmental awareness

A set of informants (n=9) held that a growing social, environmental awareness serves as an opportunity to increase green taxation. One informant pointed to the hot summer, with a lot of forest fires, as a clear message that climate change is real and that many would now be more concerned about the issue as they see how it will affect them directly (Informant 20). Another referred to it as “momentum” for the climate cause and that it is something that will bring about bigger acceptance of more stringent environmental policies (Informant 2).

On the other hand, lack of environmental awareness work as a barrier towards to increasing taxation. An informant stated that «most people consider environmental issues as a big

problem, but does not rank it high enough which will then be a barrier" for ambitious policies (Informant 14).

5.3.5 Bureaucracy

A minority of informants (n=6) stated that the bureaucracy, and more specifically the Ministry of Finance, is currently a barrier to an Ecological Tax Reform. One informant claimed that they are this particular ministry has a very traditional, economical approach with focus on cost-efficiency. For example, earmarking is something they have great resistance to as they prefer not to set aside funds for specific purposes (Informant 14). Another informant pointed out that even though some perceive this as conservative, it is actually their job to keep an overall assessment of what is best for the economy as a whole (Informant 5). Nevertheless, one informant suggested that we should use more disciplines when taking budget decisions, and not only use the economist's approach that is dominant in the Ministry of Finance (Informant 1). Further, he stated that we have many societal challenges to deal with, and we need an understanding of society as a whole, and not only the economy.

6. Discussion

Discussion of my findings are organized around four main themes: the feasibility, implementation and socio-economic consideration of an ETR, along with some limitations of this thesis. Firstly, I address which environmental taxes we increase, and whether we design them to internalise social costs or to make up a part of the stable tax base. Secondly, I discuss how we implement a reform through choice of revenue recycling. Thirdly, I discuss the socio-economic aspect and who bears the costs of the green shift. Lastly, some limitations of this thesis are discussed.

6.1 Pigouvian or environmentally related taxes

The results indicated that it is feasible to increase environmental taxation. The informants mainly discussed the same fees that had been revised by the Green Tax Commission (NOU 2015: 15, 2015). However, the potential rise in environmental taxation has to be seen in light of whether we are considering Pigouvian taxes or environmentally related taxes. The research indicated that informants agree with the Pigouvian rational behind taxes, that they should be targeted to internalise the social costs, and thus an incentive to reduce the environmental harming activity (Pigou, 1920). However, the research also indicated that there is potential to implement environmental taxes on activities we see as unavoidable and that are likely to

continue in the long term, like land-use. If we do not set the tax level to internalise the costs or at the level that disincentivise the activity, it could be part of a more long-term tax base.

It will affect which tax level we should set for a given activity, if we let the characteristics of the taxed activity decide whether it should be a source of revenue we see as temporary or more permanent. For carbon emissions, the level should be raised, according to both theory and informants, to the marginal costs they generate or at a politically acceptable level like the Paris agreement has defined. At the same time, we have alternatives to fossil fuels, which make it an activity we could actually phase out.

While if we were to implement a fee on land-use or land-use change, the tax level should not try to reflect the costs the activity generates according to the informants. If we were to set the price equal to the social costs, the price might be infinite, and eliminating all land-use change is not realistic. At the same time, estimating the actual costs might involve huge transaction costs. Hence, such a fee could be designed to make the polluter pay to some extent, but also give revenue and form a stable tax base. That would make it an environmentally related tax, instead of Pigouvian. Another reason to not set a price, relates to the discussion around the intrinsic value of nature. Maybe valuation of nature, biodiversity, habitats and more should stay outside the sphere of price setting.

For these reasons, activities we see as unavoidable, could be subject to a tax level that it is designed for a long-term source of revenue. At the same time, it is not realistic to divide all taxes into one of the two categories in a short time frame, as for example transport-related taxes currently make up a big share of government revenues and is an activity we want to disincentivise as well. To solve the legitimacy issues of such green taxes, transparent and clear communication on the intention behind each tax is needed.

6.2 Choice of revenue recycling

In line with recent research on revenue recycling that says earmarking is important to gain acceptance for green taxation (Carattini et al., 2019), this is what the majority of informants stated as the way we should recycle revenue. On the other hand, the theory for an ecological tax reform says that we should shift the tax base towards unwanted activities such as "environmental bads" from wanted activities such as labour is a way to make the economy more sustainable (Daly, 1994). However, results from this research indicated that only a small minority of informants agree with this line of thinking. The majority stated that we should not shift the tax base towards activities that we want less of, but rather use the revenue in some

way to increase the effectiveness of the instrument or counter distributional effects. These two ways of recycling revenue corresponds to the mentioned Ecological Fiscal Reform or Ecological Tax Reform (Clinch et al., 2006). There was also strong support for not recycling the revenue directly, but absorb the revenue into the general state budget and spend the money where it is the most needed. Per definition this would not qualify as neither of the two reforms, rather just be an increase in the general tax level through raising environmental tax revenue. Although a combination of all the types of revenue recycling does not correspond to the theoretical definition of an Ecological Tax Reform, in practice it is the adopted term and encompasses more than one form of revenue recycling.

Whether the increase in environmental taxation happens through Pigouvian taxes or environmentally related taxes should influence the choice of revenue recycling. Taxes that are intended to internalise social costs could call for using the revenue towards creating alternatives or alleviate the distributional effects they may entail. If however, the taxes does not try to reflect the social costs and could generate revenues over a longer period, this could suggest shifting parts of the tax base towards these "bads" from desired "goods", such as labour, or other ways to gain acceptance of the policy instrument.

The choice of revenue recycling can be examined in light of the three criteria for a legitimate output of a policy instrument outlined by Vatn (2015), a) distributive justice, b) effectiveness, c) efficiency. The different types of revenue recycling defined by Baranzini et al. (2000) can each meet one of these. The first type of revenue recycling of reducing distorting taxes is more cost-efficient in neoclassical economic terms, the second type of revenue recycling of subsidising cleaner technology can increase the effectiveness towards reducing environmental impact, while the third type of compensation measures, address the distributional impact. The criteria one value higher, should determine the type of reform that should be implemented. The findings suggested that the criteria of distributional justice need to be given more emphasis, at the same time as the majority of informants chose earmarking as desired revenue recycling to speed up the transition to a more sustainable society. Further studies should be done to determine the optimal combination of different ways of revenue recycling to increase legitimacy along the lines of distributional justice and effectiveness.

6.3 Who bears the costs of the green shift?

Findings from this research suggested that if we are to implement any type of reform, distributional effects need to be accounted for throughout the design of the taxes and to not rely upon other policy instruments to deal with this issue. As seen in this thesis, experience

from the transport sector in Norway where green taxes have both a fiscal and an environmental objective, is social unrest such as the "toll booth rebellion" most prominent in the Stavanger region (Vikøyr et al., 2018). Another recent example of public resistance to green taxes includes the "gilets jaunes" movement in France. Although the unrest has been attributed to raise in *green* taxes, this may be unwarranted. The gilets jaunes mainly have claims regarding social inequality (Bouyé & Dagnet, 2018). Likewise, the leader of the movement against toll booths in Norway, which have the slogan "Yes to the environment, no to toll booths", claims that she is concerned about the environment, but that not everyone has the possibility to bike or use public transportation and depend on their fossil car to get through the day (Sandberg, 2018). The perception of whether toll booths and the flat fees should finance road projects or be an environmental policy tool that subsidises alternative transportation methods is a central issue of the rebellion (Holmelid, 2018). Hence, the above-mentioned movements may not be opposing the goal of combatting environmental issues, but rather the unjust effect the choice of policy instrument produces. In other words, the question raised by these movements is not whether there should be a green shift but rather *who will pay the bill* of the green shift.

In line with the theory, it is the tax interaction effect that makes the poorer pay a relatively bigger share for the green shift (Pearce, 1991). Even though environmental taxes cannot address this issue alone, at least environmental taxation should not exacerbate social injustice. Carefully studying how any increase or implementation of taxes will affect prices in general and how it affects the real wage of workers through the tax interaction effect is necessary. Whether industries that are subject to taxes pass them through to the consumers or not, is also a central element. For goods and services that do not have less environmentally harmful alternatives, one should consider the choice for revenue recycling or other policy instruments to address the distributional effects.

As seen in both the theory chapter (Bernow, 1998) and the data material, one could use the existing, progressive tax system to give back to the poorer populations or some sort of lump-sum transfers to individuals or groups that are hit the hardest. As this was not something informants saw as desirable do to unsure effects, further research needs to be done on lump-sum transfers.

6.4 Limitations

A limitation of this thesis may be that the majority of informants had their main competence on the climate issue. A broader sample with more informants involved in other environmental issues may have provided different points of views. On the other hand, this is also the issue that is most covered by fees. Likewise, if there were more representatives from the industry, there might be less perceived room to increase, and implement new, taxes that would affect these industries.

The transferability of the results from this thesis to other countries or time periods, needs to be seen in light of the political context for this study described in the case chapter. Factors such as the current tax level, government, social movements and the like will influence whether the results can be transferred to another setting.

7. Conclusion

The purpose of this thesis was to assess the potential of advancing policies towards an Ecological Tax Reform in Norway. The findings demonstrate that a reform can be feasible through increasing existing taxes like the CO_2 fee and transport-related fees, and by implementing new ones, such as fees on nature and land-use change. As part of an extended use of environmental taxation it is essential to clarify the objective of such taxation, whether the purpose is to discourage environmentally harmful activities, to use green taxes to create a broader and more stable tax base for government, or both. Additionally, the use of taxation needs to be seen in relation to other possible policy instruments that can counter environmental degradation.

Furthermore, before the implementation of a tax reform it is important to define how the increased revenues shall be spent. Revenues should preferably be used in a way that increases the legitimacy of this policy instrument, but not necessarily to reduce distorting taxes like neoclassical economics suggest. Although some of the revenue could go into the general state budget, it is necessary to spend portions of it to increase the effectiveness of taxes and address negative distributional effects.

Lastly, socio-economic aspects have to be addressed throughout the design of a reform. Although environmental awareness is rising and there is relatively high acceptance for taxes in Norway, policies that generate unjust social effects or pose a too big disadvantage for the

industry, will be difficult to implement. Policy instruments that distribute the costs of the green shift fairly is imperative.

Sharing the burden of a transition towards a sustainable society is crucial to avoid increased social inequality and to maintain public acceptance for policies that limit environmental impact. When the design elements have been solved in a satisfactory way, the lessons from this thesis indicate that an Ecological Tax Reform should indeed be an important component in the green shift. Implemented correctly, the policy instrument can both address the environmental challenges and the social inequality that we face.

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Appendix 1: Informants

Informant	Key informant group
1	Environmental NGO
2	Environmental NGO
3	Environmental NGO
4	Interest group
5	Think tank
6	Interest group
7	Interest group
8	Academia
9	Environmental NGO
10	Interest group
11	Academia
12	Interest group
13	Think tank
14	Academia
15	Academia
16	Interest group
17	Environmental NGO
18	Academia
19	Interest group
20	Interest group
21	Interest group
22	Interest group
23	Think tank
24	Academia
25	Academia
26	Government
27	Government
28	Think tank

Appendix 2: Interview guide

Norges miljø- og biovitenskapelige universitet

Et grønt (skatte)skifte

Det grønne skiftet er ikke bare et buzz-ord, men det er den omleggingen vi gjør for å skape et bærekraftig samfunn. Regjeringen mener skiftet blant annet innebærer å gå vekk fra forbruk av varer og tjenester som har negativ miljøpåvirkning og begrense menneskelig aktivitet til å holde seg innenfor planetens tålegrenser. For å få til dette, finnes det flere virkemidler man kan implementere. Lover, reguleringer og økonomiske virkemidler. Grønne skatter er et eksempel på sistnevnte. I forbindelse med skattlegging av miljøskadelig aktivitet, har litteraturen vist at denne kan gi såkalte «doble gevinster». Man reduserer uønsket aktivitet, men får også inntekter som kan brukes til å øke den generelle velferden i samfunnet. Dette har blitt kalt et grønt skatteskifte og ble også anbefalt fra Grønn skattekommisjon sin rapport «Sett pris på miljøet» (2015). Likevel blir ikke nye skatter implementert i et vakuum og det er usikkert hva den samlede effekten blir på den generelle velferden.

Ettersom litteraturen ikke er entydig på hvorvidt et grønt skatteskifte fører til doble gevinster, vil jeg bruke denne oppgaven på å kartlegge hva relevante aktører i Norge mener om et grønt skatteskifte. Er det (politisk) ønskelig og mulig å innføre et slikt skifte i dag? Spørsmålene er hovedsakelig delt inn i 2 kategorier; 1) Skatter og avgifter som virkemiddel, og 2) en grønn skattereform.

Introduksjon

- Kan du fortelle litt om hva du jobber med for tiden?
- Har du gjort noe på skatter i det siste? Evt. miljøavgifter?

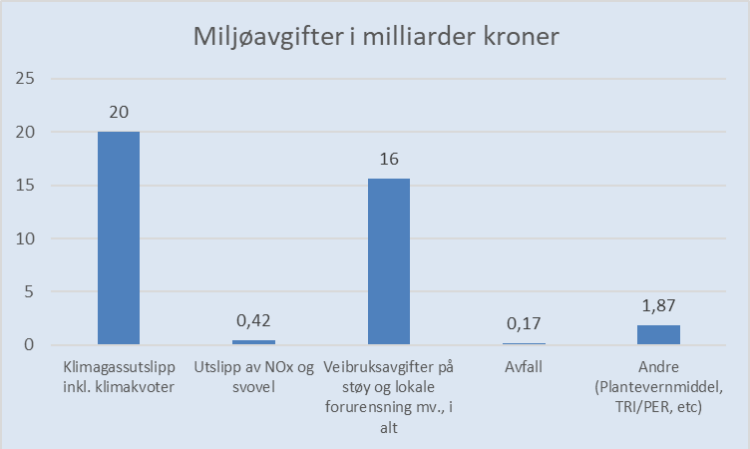
Skatter og avgifter som virkemiddel

1. Er det noen av avgiftene vi har i dag du mener burde vært høyere eller lavere?

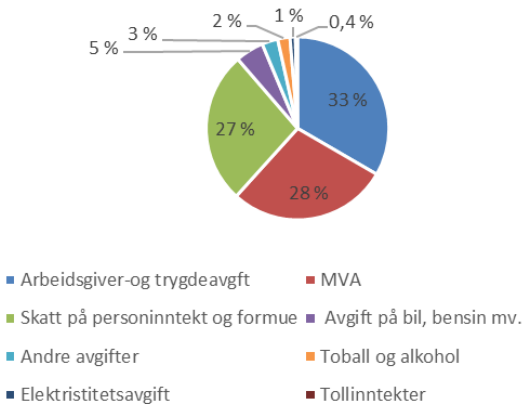
2. Har du eksempel på annen miljøskadelig aktivitet som bør skattlegges/andre miljøavgifter du vet om (enn i Figur 1)?

(Er det andre virkemidler du mener bør brukes i stedet for miljøavgifter?)

Figur 1 Miljøavgifter i 2017. Kilde: SSB



Figur 2 Prosentvis fordeling av inntektene fra skatter og avgifter 2016 Fastlands-Norge. Kilde: Regjeringen



De totale skatteinntektene var på 929 milliarder kroner i 2016. Miljøavgifter står for 5% av de totale skatteinntektene (en blanding av avgift på bil, bensin og andre avgifter).

3. Mener du at dette er riktig nivå, sammenlignet med de andre skatter og avgiftene?

4. Mener du dette tallet burde vært lavere eller høyere? Altså at kaken blir mindre eller større

Grønn skattereform

I statsbudsjettet for 2017 fulgte Regjeringen anbefalingen fra Grønn skattekommisjon om å gjennomføre et grønt skatteskifte, og økte skattene på klimagasser og drivstoff. I 2017 var miljøavgiftene på 38 milliarder kroner som innebar en økning på 12% fra 2016.(Samtidig ble det gitt store skatteletter til transportsektoren som står for en stor andel av utslippene (Miljøstatus). Statsbudsjettene for 2018 og 2019 har ikke videreført det grønne skatteskiftet.

5. Mener du Norge bør videreføre den (provenynøytrale) grønne skattereformen regjeringen begynte i 2016?

☐ Ja

☐ Ja, hvis _____

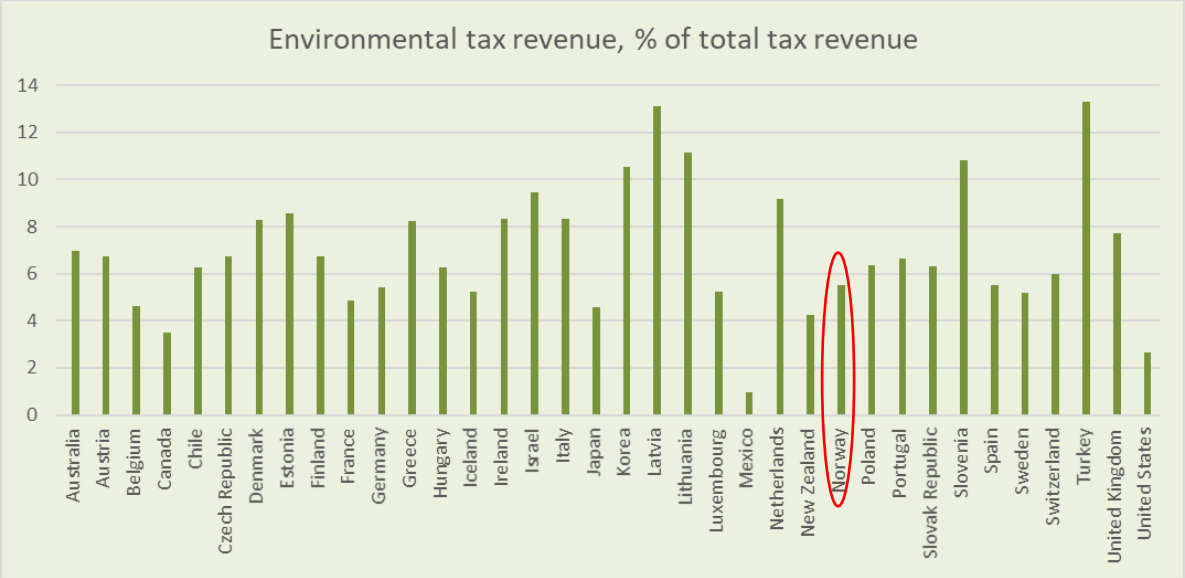
☐ Nei (i så fall, hvorfor? _____)

6. Hvordan bør skatteinntektene brukes (kan velge flere)?

- ☐ Øremerkes (for eks. miljørettet arbeid innen teknologiutvikling, FoU, støtteordninger)
- ☐ Gis tilbake til befolkningen i engangsbeløp (KAF)
- ☐ Brukes til å senke det generelle skattenivået for privatpersoner
- ☐ Brukes til å senke det generelle skattenivået for selskaper
- ☐ Annet: _____

I forhold til andre OECD-land ligger Norge litt under gjennomsnittlig på hvor stor andel av skatteinntektene som kommer fra miljøavgifter. Tyrkia og Latvia har høyest med miljøskatter som er litt over 13% av de totale skatteinntektene. Nabolandene våre Sverige og Danmark har hhv 5,1% og 8,3% av de totale skatteinntektene.

Figur 3 Miljøavgifters andel av totale skatteinntekter i OECD 2014



Men når det kommer til totalt skattetrykk derimot har vi et relativt høyt skattetrykk på nærmere 40% (inkludert petroleumssektoren) av de totale inntektene. OECD-gjennomsnittet er på 34%.

Omfang av et grønt skatteskifte

7. Hvilket scenario for en økning i miljøavgiftene (som andel av de totale skatteinntektene) ser du på som ønskelig, i en provenynøytral sammenheng?

I 2020 (neste år)

☐ *5%* ☐ *10%* ☐ *20%* ☐ *30%* ☐ *40%* ☐ *50%* ☐ *75%* ☐ *100%*

I 2030 (om 11 år)

☐ *5%* ☐ *10%* ☐ *20%* ☐ *30%* ☐ *40%* ☐ *50%* ☐ *75%* ☐ *100%*

I 2050 (om 31 år)

☐ *5%* ☐ *10%* ☐ *20%* ☐ *30%* ☐ *40%* ☐ *50%* ☐ *75%* ☐ *100%*

Muligheter for gjennomføring

8. Hvis du valgte noe annet enn BAU over, tror du det er mulig å starte en slik omlegging nå? Hva er mulige drivere og barrierer?

Avsluttende spørsmål

9. Har du noe mer å tilføye på noen av de punktene vi har snakket om eller legge til noe annet? Noen andre jeg bør snakke med?

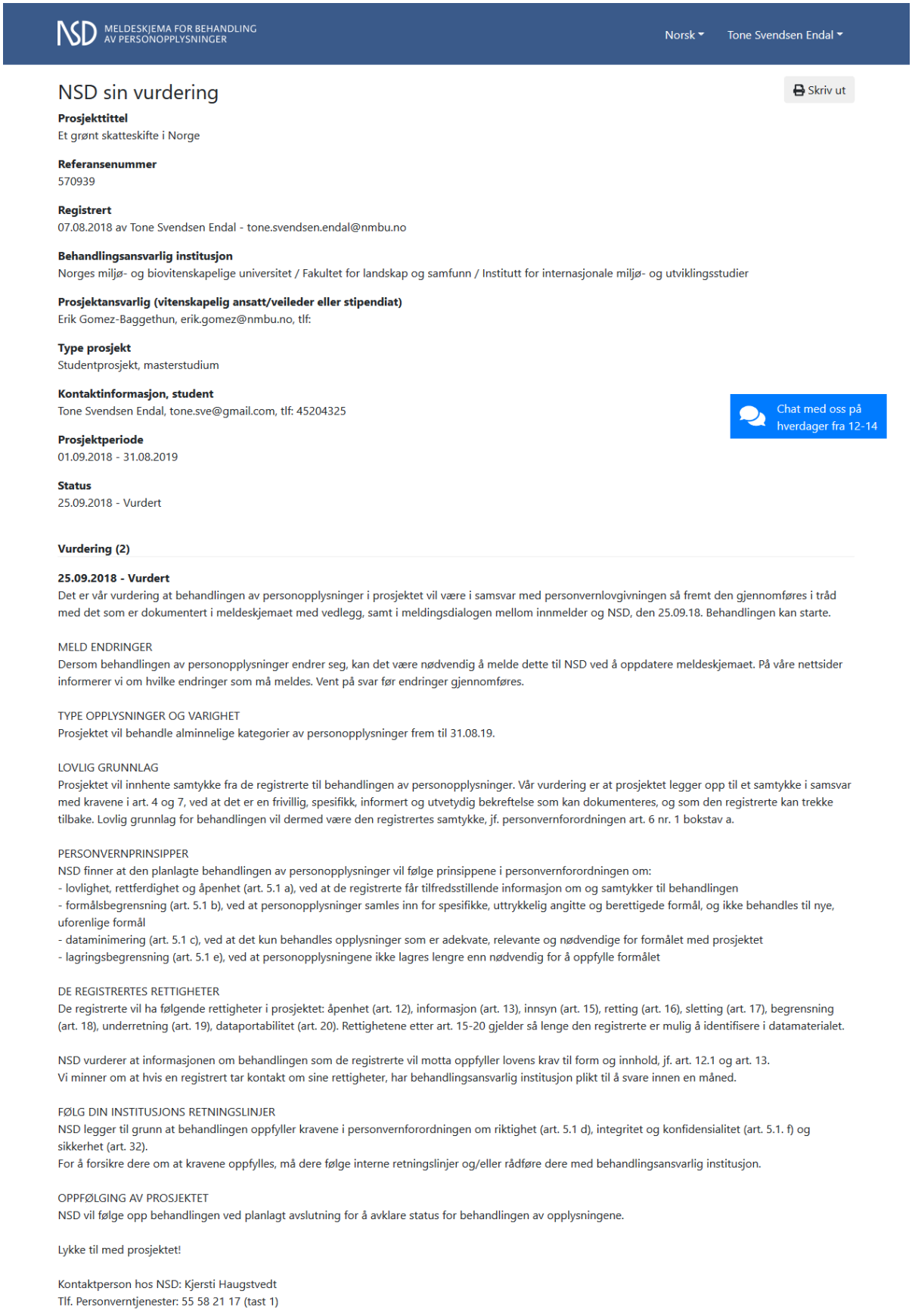
Alder: ____

Kjønn: _____

Yrkestittel: _____

Inntekt: < 350 000 ☐ 350-450 000 ☐ 450-550 000 ☐ 550-650 000 ☐ > 650 000 ☐

Appendix 3: NSD receipt



NSD MELDESKJEMA FOR BEHANDLING AV PERSONOPPLYSNINGER

Norsk ▾ Tone Svendsen Endal ▾

NSD sin vurdering

Skriv ut

Prosjekttittel
Et grønt skatteskifte i Norge

Referansenummer
570939

Registrert
07.08.2018 av Tone Svendsen Endal - tone.svendsen.endal@nmbu.no

Behandlingsansvarlig institusjon
Norges miljø- og biovitenskapelige universitet / Fakultet for landskap og samfunn / Institutt for internasjonale miljø- og utviklingsstudier

Prosjektansvarlig (vitenskapelig ansatt/veileder eller stipendiat)
Erik Gomez-Baggethun, erik.gomez@nmbu.no, tlf:

Type prosjekt
Studentprosjekt, masterstudium

Kontaktinformasjon, student
Tone Svendsen Endal, tone.sve@gmail.com, tlf: 45204325

Chat med oss på hverdager fra 12-14

Prosjektperiode
01.09.2018 - 31.08.2019

Status
25.09.2018 - Vurdert

Vurdering (2)

25.09.2018 - Vurdert
Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg, samt i meldingsdialogen mellom innmelder og NSD, den 25.09.18. Behandlingen kan starte.

MELD ENDRINGER
Dersom behandlingen av personopplysninger endrer seg, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. På våre nettsider informerer vi om hvilke endringer som må meldes. Vent på svar før endringer gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET
Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 31.08.19.

LOVLIG GRUNNLAG
Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER
NSD finner at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om:
- lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen
- formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke behandles til nye, uforenlige formål
- dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet
- lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER
De registrerte vil ha følgende rettigheter i prosjektet: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20). Rettighetene etter art. 15-20 gjelder så lenge den registrerte er mulig å identifisere i datamaterialet.

NSD vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13.
Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER
NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32).
For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET
NSD vil følge opp behandlingen ved planlagt avslutning for å avklare status for behandlingen av opplysningene.

Lykke til med prosjektet!

Kontaktperson hos NSD: Kjersti Haugstvedt
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

25.09.2018 - Vurdert
Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg, samt i meldingsdialogen mellom innmelder og NSD, den 25.09.18. Behandlingen kan starte.

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TYPE OPPLYSNINGER OG VARIGHET
Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 31.08.19.

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Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

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OPPFØLGING AV PROSJEKTET
NSD vil følge opp behandlingen ved planlagt avslutning for å avklare status for behandlingen av opplysningene.

Lykke til med prosjektet!

Kontaktperson hos NSD: Kjersti Haugstvedt
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

b246

NSD NORSK SENTER FOR FORSKNINGSDATA

Norsk | Tone Svendsen Endal

Et grønt skatteskifte i Norge

Referanse
570939

Status
Vurdert

Åpne Meldeskjema | Vurdering

Skriv melding her

Send melding

N

NSD Personvern
25.09.2018 14:13

Det innsendte meldeskjemaet med referansekode 570939 er nå vurdert av NSD.

Følgende vurdering er gitt:

Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg, samt i meldingsdialogen mellom innmelder og NSD, den 25.09.18. Behandlingen kan starte.

MELD ENDRINGER
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TYPE OPPLYSNINGER OG VARIGHET
Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 31.08.19.

LOVLIG GRUNNLAG
Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

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FØLG DIN INSTITUSJONS RETNINGSLINJER
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For å forsikre dere om at kravene oppfylles, må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET
NSD vil følge opp behandlingen ved planlagt avslutning for å avklare status for behandlingen av opplysningene.

Lykke til med prosjektet!

Kontaktperson hos NSD: Kjersti Haugstvedt
Tlf. Personverntjenester: 55 58 21 17 (tast 1)

N

NSD Personvern
20.09.2018 18:08

Kvittering på at meldeskjema med referansekode 570939 er innsendt og mottatt.

T

Tone Svendsen Endal

20.09.2018 17:54

Hei igjen.
Takk for tilbakemelding. Jeg skjønner at det ikke har vært korrekt fylt ut. Etter jeg sendte det inn, har vi gjort noen endringer i prosjektet og vi skal kun gjøre intervju. Jeg har derfor endret en del av det som jeg fylte inn sist, og noen av endringene du ber om faller altså da bort. Men de resterende tror jeg at skal være på plass nå. Vil det nå ta 6 nye uker før gjennomgangen er ferdig? Takk for hjelpen! Mvh Tone

N

NSD Personvern

13.09.2018 14:28

Det innsendte meldeskjemaet med referansekode 570939 må kompletteres for at NSD kan gi det en vurdering.

Følgende kommentar er gitt av NSDs personvernrådgiver:

Hei Tone,
Vi har nå gjort en første gjennomgang av meldeskjemaet ditt, og har noen kommentarer og spørsmål:
• Du må fylle inn hvilke demografiske opplysninger (Yrke, kjønn, alder, inntekt, fødested) øverst under Type opplysninger.

• Det må være samsvar mellom de typene personopplysninger du oppgir du skal samle inn på første siden, og kryssene under 'Type opplysninger for utvalg 1' på siden Utvalg.
Nå mangler det en avhuking for fødselsdato. Videre, lurer vi på om det er nødvendig å samle inn fødselsdato? Om det kun er fødselsår/alder du skal samle inn bør du heller legge til «alder» som en demografisk opplysning.

• Du må legge inn hvilke datakilder (metoder) du skal bruke. Dette gjør du under fanen Utvalg. Når du trykker på '+ Legg til datakilde' vil en søkestrek dukke opp, trykk inni denne for å få opp alternativer som Personlig intervjue og Elektronisk spørreskjema.

• Når du krysser av for personligintervju vil du bli bedt om å laste opp intervjuguiden din her.

• Du skriver «Hvis jeg sender ut spørreundersøkelsene elektronisk kan programvaren jeg bruker lagre epost/ip-adresse til mottaker». Hvilken programvare tenker du å bruke? Om løsningen du bruker ikke er anonym (dvs. epost/Ip-adresse kan spores) må det foreligge en databehandler avtale mellom USN og databehandleren. Videre må du da krysse av for 'ekstern tjeneste eller nettverk' og 'databehandler' under fanen Behandling.

• Du har krysset av for at du vil bruke 'privat enhet' under behandling. Vennligst last opp/link til NMBUs retningslinjer for behandling av opplysninger på private enheter.

• Informasjonsskrivet du har utformet er i hovedsak godt laget, men vennligst oppdater følgende punkter:
- Du skriver «Grunnen til at jeg ønsker å samle inn personopplysninger som yrke og alder.....» i informasjonsskrivet, mens i intervjuguiden fremkommer det at du også vil samle inn informasjon om fødested, kjønn og inntekt. Her må det være samsvar (og med resten av meldeskjemaet).

- I informasjonsskrivet oppgir du at «Ved prosjektets slutt vil alle opplysninger om deg bli slettet», mens du under Varighet i meldeskjema krysser av for 'data vil bli oppbevart uten personopplysninger'. Du må velge enten eller, og oppgi samme begge steder.

- Jeg savner ett avsnitt i informasjonsskrivet om hvilke sikringstiltak du gjør (I meldeskjemaet oppgir du tastelås fingeravtrykk og adgangsbegrensning), samt informasjon om hvilken databehandler (leverandør av spørreskjema) du benytter deg av.

Vi ber om at du oppdaterer meldeskjemaet i henhold til punktene over og laster opp aktuelle vedlegg. Vi minner om at du på siste side i skjemaet under «Send inn» må velge «Bekreft innsending». Når du har gjort dette vil vi gjøre en ny gjennomgang av ditt prosjekt.
Lykke til med videre utfylling!

Du finner meldeskjemaet ditt på meldeskjema.nsd.no/5b69688b-3c74-488c-845f-b5f43031ec38/rediger

Du kan chatte direkte med NSDs personvernrådgivere fra ditt meldeskjema. Du kan også svare på denne meldingen på minside.nsd.no.

N

NSD Personvern

07.08.2018 11:46

Kvittering på at meldeskjema med referansekode 570939 er innsendt og mottatt.

Norges miljø- og biovitenskapelige universitet
Noregs miljø- og biovitskapelege universitet
Norwegian University of Life Sciences

Postboks 5003
NO-1432 Ås
Norway