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Farmers as Climate Citizens

Abstract

This article explores the potential for farmers to become climate citizens. Drawing on in-depth interviews, we analyse how Norwegian farmers relate to climate change in their everyday farming practises. After discussing the concepts of environmental and ecological citizenship, we propose the climate citizen approach to meet the challenges that climate change poses to agriculture. Until now, Norwegian farmers' response to climate change has been limited. Major changes in farming practises seem unlikely without incentives from the state. A climate citizen approach can help balance a response to institutional regulations and policies with the individual moral obligation to take personal and non-reciprocal responsibility for the planet. In order to influence how farmers might incorporate climate change awareness into their everyday practises, policy makers should take existing norms and values in the agricultural community into account and adopt clear and manageable instruments to reward farmers for taking adaptive measures.

Keywords: climate change; agriculture; citizenship; responsibility; Norway

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1. Introduction

Globally, climate change is one of the most widely discussed and hotly debated issues of our time. The agricultural sector plays an important role in climate change, as it both influences and is influenced by climate. Several policy initiatives have been taken to address this issue, and farmers in Norway and elsewhere have been encouraged to adopt more climate friendly practises. But changing agricultural practises is not straightforward. As one farmer stated bluntly, “I don’t think the climate is the biggest challenge for agriculture today.” Other studies of farmers’ everyday planning for climate change (see, e.g., Fleming et al. 2015) demonstrate that climate change is only one of many challenges farmers face.

Farming is not only an economic activity; it is also shaped by social and cultural practises. Decisions are made within the entanglements of the farm as a place and farmers as social subjects (see, e.g., Vanclay 2004, Flemsæter and Setten 2009, Primdahl et al. 2013). In this article, we analyse how farmers relate to climate change and explore the potential for farmers to become *climate citizens* within these entanglements.

Empirically, we draw on a qualitative study of how Norwegian farmers relate to climate change in their everyday farming practises and decision making in two Norwegian regions that have recently experienced extreme weather events. We pay particular attention to the way farmers perceive their own role in relation to climate change and how this has influenced their farming practises.

Analytically, we draw upon the concept of *citizenship*. Citizenship defines and regulates the rights and responsibilities identifying the membership of specific groups

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> (Chouinard 2009, Stevenson 2003). Thinking about citizenship is moving away from a limited

understanding that centres on ‘rights’ granted by state or bureaucracy toward a broader concern with a moral project “generated through greater emphasis placed on individualization and the concomitant flexibilization of rights claims” (Parker 2001, 381). Including social and cultural relationships in the concept of citizenship has become key in order to explain and understand “the practices of power” (Chouinard 2009, 110) inherent in any citizen’s belonging and participation in a community. These understandings of citizenship have been adopted by environmental social scientists, and we discuss farmers’ relations to climate change in the light of the concepts of *environmental* and *ecological citizenship* (cf. Dobson and Bell 2006, Smith and Pangsapa 2008, Dobson 2006, Hayward 2006, Wolf, Brown, and Conway 2009).

We begin by describing the context of Norwegian climate policy in general and in relation to agriculture in particular. Then we consider theories of citizenship and what these approaches have to offer to help us better understand farmers’ perceptions and practises related to climate change. After presenting our sources and methods, we discuss the empirical material with regard to farmers’ actual *responses*, their perception of their *responsibility*, and their *response-ability*—that, is their ability to respond—to climate change. We end with remarks on the potential for farmers to become climate citizens.

2. Climate Policy and Agriculture

Norwegian climate policy is heavily influenced by Norway’s emission-intensive industries within the oil and electrochemical sectors, alongside what is seen as a limited potential for

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> emission reductions in the production of energy because hydropower is already its main

source. The country's climate policy is negotiated by a coalition of emission-intensive industries, economists, and policy makers with a corporative approach (Kasa 2000, Reitan 1998). It is globally oriented, with emissions trading aligned with the EU quota system, and joint implementation. The main domestic policy instrument is a general carbon tax on emissions. Kasa (2013) argues that this top-down approach has contributed significantly to the failure of attempts to mobilize consumers, local communities, and local authorities to change their practises in a more climate friendly way. Local authorities have called for policy instruments and incentives from the state in order to implement climate policies (Dannevig, Hovelsrud and Husab 2013). The Norwegian population has been socialized to consider climate issues as part of everyday practises to only a limited extent (Kasa, Leiren and Khan 2012). This does not mean that Norwegians ignore climate change or think it is unimportant; rather, it reflects the domination of policy making by political and industry elites (Kasa 2013). An annual climate survey shows that out of 14 serious societal challenges, climate change was ranked as the sixth most important from 2010 through 2014, hit second place in 2015, and took fourth place in 2016 (TNS Gallup 2016). The official number of extreme weather events in Norway rose from 3 in 2013 to 4 in 2014 and 5 in 2015. In those years, the proportion of Norwegians who reported observing climate change rose from 11 to 25 and 31 percent respectively (TNS Gallup 2016). A nationally representative study by Austgulen and Stø (2013) showed that 7 out of 10 Norwegians believe that climate change is caused by human activity.

In Norway, agriculture's share of greenhouse gas (GHG) emissions are between 8 and 9 percent, and methane is 40 percent of its emissions (Hohle et al. 2016). Since all primary

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> production produces some level of GHG emissions, some might argue that imposing large

emission cuts on the agricultural sector might limit food production. A recent report from a group of agriculture experts, however, argues that it is possible to reduce GHG emissions from Norwegian primary production by 20 percent without harming production levels (Hohle et al. 2016). These cuts can be achieved through a mix of yield efficiencies in dairy and animal production, improved fertilization technologies, biogas production from manure and food production residuals, improved soil cultivation, and increased CO² sequestration in soils and forest (Hohle et al. 2016, Bonesmo and Harstad 2013). These measures, however, might be insufficient to help Norway reach its national mitigation goals, recently communicated at the Paris climate summit: 40 percent reductions in emissions by 2030, with 1990 as a point of reference, and two thirds of which is to be accomplished inside Norway's own borders (NOU 2015). Based on a tradition of sectoral responsibility in policy implementation in Norway (Kleven 2000), agriculture might face far tougher emission reductions than the 20 percent described by the agricultural experts (Hohle et al. 2016). These differences reflect a conflict of opinion between the agricultural sector on the one hand and some politicians and civil society groups on the other when it comes to which sectors should contribute most to climate change mitigation. At the base of the current agriculture and climate mitigation debate in Norway is a governmental White Paper from 2009 describing agriculture as "part of the solution" and an important contributor to Norway reaching its emission targets (LMD 2008-2009).

Gradually increasing pressure and rising expectations from those outside the agricultural sector are among the reasons why Norwegian farmers ought to consider implementing climate mitigation measures at their farms. Two other reasons are self-interest

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> and legitimacy. Agricultural production depends heavily on the weather, and mitigating

harmful climate changes should be at the top of every farmer's agenda. Early projections by the IPCC suggested that elevated areas located towards the north—including Norway—could benefit from a warming climate due to a longer growing season and increased C-fertilization (Lobell 2010). Recent reports contradict this claim. Increases in the intensity and amount of precipitation will cause spring floods, make it more difficult to operate machinery and work the land during planting and harvest, and promote fungus and plant diseases, outweighing the positive effects of a warmer climate (Førland et al. 2015, Hanssen-Bauer et al. 2015, Kovats et al. 2014). In 2010, an extreme winter followed by a series of bad weather events led to a failed harvest in Troms county in northern Norway (Bjørkhaug and Rønningen 2013). With respect to legitimacy, we argue that since this sector receives state subsidies which are directly linked to types and volumes of production, declining to implement climate measures that are recommended by politicians or expected by the public might diminish support for continued farm subsidies in the medium to long run.

It is on this complex terrain that farmers manoeuvre when they are making decisions about farming practises. Being a farmer is a social and cultural matter. While it obviously involves self-interest, that can take many forms (Dobson and Bell 2006), and it is widely recognised that farmers' self-interest often extends beyond monetary benefits to encompass social and cultural relations (Busck 2002, Gasson 1973, Higgins and Lockie 2002). Hyland et al. (2016) argue that self-identity guides how farmers approach environmental issues and that the two best-known identities are pro-environmental and productivist. Productivism is often legitimized by government policies stressing increased agricultural output and food security as a national interest (Burton and Wilson 2006). Pro-environmentalism is often linked to

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awareness of climate change and its local consequences. Researchers have found correlations between farmers' perceptions of climate risks and their willingness to implement climate mitigation measures on their farms (Arbuckle et al. 2015, Lorenzoni et al. 2007, Niles et al. 2013).

Acting responsible and making climate friendly changes is challenging for farmers (Fleming and Vanclay 2010), not least because researchers and other experts disagree about Norwegian agriculture's effects on climate change and on what future steps should be taken. A survey from the CSCAPE project on Norwegian farmers' relationship with global climate change and agricultural practises showed that 98 percent of Norwegian farmers had no plans to make specific investments or restructure their operations on the grounds of climate change (Aasprang 2013, Brobakk 2017).¹ Nevertheless, 41 percent expected to be affected by climate change within the next ten years; significantly, as many expected positive outcomes for their businesses as expected negative ones. One interpretation of the data is that farmers held only weak opinions about near-future interrelationships between everyday farming practises and climate change, and only a minority (42 percent) were engaged in the climate debate. When asked to rank policy priorities, issues related to farm economy and food production are more important than reducing GHG emissions from the farm sector (Brobakk, 2017).

Hulme (2009) argues that the main reasons for disagreement about how to cope with climate change are connected to how we wish to live together in society. The political processes that shape environmental decisions depend on people's disposition to care for the

¹ The survey was sent to a random sample of 1500 farmers selected from 44770 active farms in Norway. A total of 646 farmers responded, giving a response rate of 43.5 percent (Aasprang 2013).

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global commons and to take their part of a shared responsibility for the climate. How likely is it that Norwegian farmers will become *climate citizens*?

3. Citizenship and the Environment

Recently we have seen a resurgence of interest in the relationship between *citizenship* and consumption practises related to environmental issues (Dobson and Bell 2006, Soper and Trentmann 2008, Shove and Warde 2002, Seyfang 2006). Generally, citizenship concerns individuals' membership in a community and their commitment to rights, entitlements, and obligations (Chouinard 2009). Citizenship theory has moved away from a fixation on membership in a particular nation-state and members' legally defined rights and duties towards an understanding of citizenship as concerning informal as well as formal entitlements and obligations pertaining to certain cultural, material and temporal spaces (Chouinard 2009, Smith and Pangsapa 2008, Stevenson 2003, Flemsæter, Setten, and Brown 2014, Parker 2006). Citizenship, both in the sense of rights and duties related to nation-states and in the sense of belonging to other cultural spaces, might involve perceptions and practises pertaining to the environment, in particular to environmentally sustainable behaviour and the politics of obligation (Smith 1998).

Conceptualisations of citizenship in environmental discourse have evolved along a division between actor- and structure-centred perspectives, and scholars have moved from merely talking about environmental citizenship to distinguish between *environmental* and *ecological* citizenship (see, e.g., Dobson and Bell 2006, Wolf, Brown, and Conway 2009,

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Smith and Pangsapa 2008, Dobson 2003). This distinction relies largely on how obligations

and entitlements pertaining to the environment are configured, understood, and practised.

The concept of *environmental* citizenship has become a buzzword in debates both within and outside academia (Barry 2006). Within the body of literature on environmental citizenship, two branches can be discerned that pay particular attention to the *responsibilities* involved in being an environmental citizen. The first refers to teaching values and encouraging shifts in everyday practises towards more sustainable behaviour (Horton 2006). This definition rests on the traditional view of citizenship as a relation between individuals and formal institutions, in which people respond to guidelines and recommendations from a polity (cf. Dobson 2006, Hayward 2006). The underlying presumption is that people's awareness of environmental issues is strengthened through governmental programs or environmental organisations and that people "need to be disciplined into 'good', 'green' behaviours" (Horton 2006, 128). This understanding assumes territoriality and a certain visibility among citizens and between citizens and the polity. Visual symbols are often used to signify membership in the polity, and citizens become members of an audience or co-watching community, which might shape their view of themselves (Szerszynski 2006).

The second use of environmental citizenship is less visible and contrasts to the first by focusing on people's behaviour related to a non-contractual responsibility towards non-territorial cultural and political spaces. This definition is similar to what Dobson (2003) described as post-cosmopolitan ecological citizenship. This understanding of citizenship stretches beyond a relationship between individuals and the state. Responsibility for action is asymmetrical in the sense that privileged groups in affluent societies bear the greatest responsibility for unsustainable behaviour, whereas underprivileged groups in less affluent

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> societies are those who are most harmed (Horton 2006). This kind of citizenship connects the

local context with the global: “The local becomes experienced in a different way, one in which a certain abstraction informs the very perception of the particular” (Szerszynski 2006, 86–87). Szerszynski points to the invisibility of this kind of environmental citizenship by suggesting *blindness* and *distance* as metaphors or ways of thinking about environmental citizenship, as these concepts help us frame the intangible connections between the local particulars and the global whole. Dobson (2003) argues that this post-cosmopolitan view of citizenship is required to understand contemporary global ideological and material changes.

We thus discern two distinct concepts of citizenship pertaining to environmental responsibility. The idea of *environmental citizenship* is based on membership in a polity, and the polity is mainly responsible for finding good solutions and teaching them to its citizens. Individuals should follow these instructions in a reciprocal relationship with the polity, without necessarily perceiving environmental concern as a motivating force in itself. The idea of *ecological citizenship*, in contrast, is based on the acknowledgement of a non-reciprocal and non-territorial responsibility for a global whole; individuals feel a moral obligation to contribute to an improved environment through their everyday actions.

We introduce the concept of *climate citizen* to challenge the actor-structure dichotomy inherent in these two definitions, and we use farmers, a group of citizens who are accustomed to operating at the interface between policy regulation and individual choice, as our subjects of investigation.

4. Methods

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Our qualitative analysis is based on 16 in-depth interviews, 13 of which were carried out with farmers on their farms. Additionally, we carried out three telephone interviews with a farmer, one representative of the farmers union and one representative for a local agricultural authority. Interviewing farmers in the landscape they are managing is both interesting and demanding. We expected that relating global climate issues to everyday practises would be challenging. It seemed vital to provide a concrete, local context for discussion of a global issue that is often presented abstractly. Approaching climate change through recent events enabled farmers to reflect on nature, weather, and normality and abnormality in farming conditions. Therefore, we selected two municipalities, one in Mid-Norway and one in South-Eastern Norway where extreme weather situations, such as heavy rainfall and flooding that affected many farms, could easily be connected to climate change. We got help from the local agricultural authorities to send a short questionnaire to all farmers in the municipalities where we asked about the main production types, if they had recently been affected by extreme weather events and if they were willing to participate in an interview. From those who answered and were willing to participate and who had recently experienced extreme weather events, we selected a variation of informants where production type and age were key factors.

Issues that were raised in the interviews included farmers' observations of weather changes, what actions they had taken on the farm in response to these conditions, and climate change in general. Subsequently we discussed to what degree they responded to climate change in their everyday practises, and to what extent they were likely to take individual action in response to various policy initiatives aimed at influencing their decisions. Present

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> and future dispositions and adaptations were contextualised with information on the farm's

history and historical practises as known and communicated by the farmers.

<Put Table 1 about here.>

In addition, local agricultural authorities were consulted to learn about local agricultural practises, potential structural implementation of climate change adaptations, and the local enforcement of formal national regulations.

Interviews were electronically recorded, transcribed in full, and then coded according to the principle of cross-sectional indexing (see Mason 2002). The analysis was facilitated by computer aided qualitative data analysis (CAQDAS).

Acting like a citizen in a certain sociocultural or material domain depends on the ability to understand what responsibilities citizenship entails and to act in accordance with this understanding. The analysis is structured around three key analytical concepts relevant for how responsibility for climate change is perceived and acted upon: *response*, *responsibility*, and *response-ability*—the ability to respond (cf. McNeill and St. Clair 2011, Brown and Dilley 2012) to climate change through everyday farming practises.

5. Response

The first part of the analysis presents farmers' reflections on recent and dramatic weather events, gradual ecological changes, and the possible relationship between these changes and global climate change.

In their interviews, farmers readily reflected on climate change in general and its local manifestations, but connecting these ideas and observations to their actual farming practises

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> seemed more difficult, and to a certain degree was perceived as less relevant. According to the

national survey, only 2 per cent of Norwegian farmers have planned to make specific investments or restructure their operations on the ground of climate change (Aasprang 2013). Not only are there few concrete responses to climate change, but there is a gap between farmers' invisible perceptions and their visible actions.

We delved more deeply into these issues in the interviews. We found that it is not necessarily a lack of knowledge among farmers that causes a seeming lack of engagement with future climate effects. Farmers work very close to nature amidst shifting weather conditions, so they make detailed observations of climate changes and often express specific local knowledge about the relations between climate and ecology. An elderly male farmer had observed small-scale ecological changes over a long period:

Yes, I think it will be warmer and there will be more precipitation. If you look at the moss-covered stones, this has really increased a lot. You see it on roof stones, and on outdoor steps facing north and east. Earlier, there was no moss on the south side of the house, on the steps, on the foundation wall and such. But there is now.

Farmers recognize that structural changes in Norwegian agriculture during recent decades have influenced, and in certain areas increased, farms' vulnerability. In order to use large tractors and machines more efficiently, fields have been enlarged by removing lines of trees that formerly divided them and putting small streams in pipelines. In one of the areas where we conducted interviews, there had recently been severe flooding and large parts of the fields were heavily damaged by erosion. A male farmer in his fifties explained:

We would not have seen the same damage only 50 years ago. Even when we started here, 20–30 years ago, I remember how these fields were separated by ditches.

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Structural changes in the fields had severe negative effects.

In light of these perceptions, to what extent, and how, is farmers' knowledge about climate change and its local effects reshaping their everyday practises on the farm? Moreover, are individual farmers primarily responsible for taking actions to adapt to or mitigate perceived climate changes? When it comes to decreasing emissions and increasing carbon storage capacity, the distance between everyday actions and long-term effects seems to be crucial in farmers' decision making. A young farmer who had recently moved back to the farm with his wife and children said:

Well, you do think about it sometimes, but it is in a sense still so distant that you don't ... that you don't consciously appreciate it in your everyday duties, but of course, it is still there at the back of your mind.

Many of the farmers we interviewed had opinions about how climate change might affect agriculture, and the interview material supports the findings from the survey, which revealed a tendency for farmers to be primarily concerned about the economic effects of ecological changes caused by climate change, both positive and negative. In the interviews, longer growing seasons and improved conditions for new species were repeatedly mentioned as potential positive scenarios caused by climate change. A combined pork and sheep farmer was optimistic:

Seen from a Norwegian farmer's perspective, it's not that bad if it gets warmer and a bit wetter.

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When directly challenged to talk about farm practises and climate change, very few interviewees had any concrete thoughts. Rather, when asked for their thoughts on the assertion that agriculture, and hence the individual farmer, plays a major role in relation to the climate change, the interviewees often brought up various environment-related issues, rather than specific climate change issues. An elderly sheep farmer stated:

Of course, you need to have a focus on the environment ... on the things you can control so to speak. (...) For my production, manure management and silage effluent are perhaps are the biggest elements of risk that I can influence personally.

The interviews demonstrate that even though many farmers see and reflect on the connections between climate change and agriculture in general, few take specific actions to adapt to or mitigate climate change. These non-responses are most obvious in the material. Farmers have taken a few actions voluntarily, mostly for economic reasons, and often connected to support schemes. There were some examples of ecologically motivated actions, but these seem to be rather rare.

There is a huge gap between the discourse of long-term climate change on the national and global policy level and the everyday local level (cf. Kasa, Leiren, and Khan 2012). Yet national authorities are aiming to achieve societal goals through agricultural policies, and farmers seem positively disposed to change their practises in accordance with goals and regulations if these are accompanied by economic incentives (Aasprang 2013). This finding is in accord with what several other scholars (see, e.g., Almås et al. 2013, Grimstad 2013) have pointed out: that Norwegian agriculture relies heavily on state subsidies, and that farmers are accustomed to agricultural authorities intervening in their practises in order to achieve goals

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> put forward by the state pertaining to food security, demography, biodiversity, and cultural

landscapes (Almås 2004). This, then, is a matter of responsibility.

6. Responsibility

Climate change discourse calls for actions to adapt to or mitigate observed and predicted changes. There seems to be a tension, on both the ideological and practical scales, about whether responsibility for change rests on the individual or institutional level. This influences not only who is expected to make decisions about adaptations and mitigations, but also who is expected and feels obliged to obtain the necessary knowledge of relevant issues. It also influences who is trusted as a reliable source of information about the economic costs and who has the legitimate social and cultural power to define appropriate and inappropriate climate behaviour. All these questions, which were raised in our empirical material, influence farmers' approaches to climate change.

The farmers we interviewed generally did not have any clear sense of whether their role is mainly to adapt to climate change or they can also play a major role in climate change mitigation. Similar patterns were revealed in the CSCAPE survey of Norwegian farmers (Aasprang 2013). In the interviews, we asked who farmers think has the responsibility to make sure that their farms adapt to climate change and operate in a climate friendly way. Most interviewees seemed to think that this responsibility is shared, but it was very hard for most of them to say concretely how individual responsibility could be put into practise. One livestock farmer said:

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Now, that's complicated. Very complicated. It is difficult to, say, park the tractor and go back to using the horse again, or things like that. It's not easy, it's not...

Most interviewees thought that the responsibility rests partly with the individual and partly on the institutional level. Some farmers tended to lean towards the individual, but emphasized that all parties have to pull in the same direction:

Well, in the end, it has to be the owner, and farmer, who has the responsibility. You cannot hide and just point at the authorities or others. But it would help a lot if regulations, and the government, were pulling in the same direction.

What a Norwegian farmer can do to limit flooding in other parts of the world is hard to relate to mundane farming practises, even though they are aware of the problem. A dairy farmer approaching retirement said:

Globally ... that is not how you are thinking on a daily basis, it's not. But I try to watch the news every evening, and I listen to the radio all day, so I am updated on the news and things like that. And, you know, there are catastrophically big floods in India and Australia, for example, large food producers. What we call natural disasters in Norway is like a storm in a teacup. (...) It's something completely different when you look at what's going on other places in the world.

Other interviewees tended to place the main responsibility on the institutional level. They asserted that that even though it has to be a joint effort, it is unrealistic to expect a farmer to take substantial economic risks or let go of obvious income sources when such efforts will be of little or no avail for the climate on a global scale. As one state official put it, "it is the system that needs to say no, not the farmer." He contended that Norway can influence farmers' decisions more effectively than other countries that rely on individual decisions, and hence on market forces:

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I think that here in Norway, we have a good policy framework (...), better than in many other countries. (...) Others have also challenges with the climate, but no policy framework.

Several interviewees buttressed this view by saying that Norway has a well-developed agricultural policy with widespread use of regulations and subsidies. A livestock farmer who responded to economic incentives activated by a state initiative to spread manure in a more climate friendly way said:

It is a good initiative, with good motives, and it works by and large in accordance with its intentions as far as I understand.

Interestingly, the same farmer followed up by saying that “it is limited what you can do on the farm” to influence climate. This comment suggests that farmers do not necessarily reflect on why various support schemes are implemented, as long as they generate valuable income and appear reasonable in light of farmers’ existing practises. A pork and sheep farmer was very explicit about the fact that for him to invest in a more climate friendly production on his farm, he would need money from the agricultural authorities because he is not particularly concerned about the potential negative effects on the climate from his farm:

To be honest, I don’t give a shit [laughing due to the correlation between his rude language and manure topic]. But if the government comes up with a support scheme, then I can always use a different tube or a different type of muck spreader to get the manure down in the ground. But then I have to get paid for it. Then it’s ok.

Our interview data underlines that Norwegian farmers are accustomed to adapting to state initiatives.

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No one can expect a simple answer to the question of who is responsible for climate change. To the extent that people affect the climate, this is clearly a shared responsibility, and many actors have to pull in the same direction if we are to expect any observable effects. A young male organic farmer stressed:

It does not matter if one farmer does a lot of climate friendly adjustments if everybody else does not also do the same. It has to be a good interaction between the government and individual farmers.

Our empirical material demonstrates that farmers generally acknowledge that decisions regarding adaptations to and mitigations of climate change have to be made on different levels, from individual farmers to global institutions, and that the decisions will rely on different kinds of knowledge, ranging from local knowledge held by each farmer to scientific knowledge from a variety of disciplines. Given this complexity, responsibility becomes fragmented, and Norwegian farmers seem not to take much individual responsibility for either adapting to or mitigating climate change. At the same time, they express generally positive attitudes toward potential climate change policy instruments and support schemes.

When looking more deeply into the prospects for sustaining agriculture in Norway, it is essential to take individuals' internal, social, and cultural motivations into account. While farmers relate to certain defined territories and visible relations between people, the responsibility for climate is non-territorial and currently rather invisible in terms of social relations. While the results of territorial responsibilities can be measured locally, a fundamentally shared and non-territorial responsibility related to climate change can better be measured globally. Hence, the lack of individual responses as well as responsibilities might be

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> an effect of how farmers perceive their ability to respond to climate change on an individual

and local level. We now consider this *response-ability* in depth.

7. Response-ability

Farmers' ability to act is both promoted and inhibited by economic, social, cultural, and ecological factors. By *response-ability* we mean the capacity people have to respond (McNeill and St. Clair 2011, Brown and Dilley 2012), that is, the scope of farmers' action, given the complex context of the farm as a place, farming as a business, and farmers as social subjects.

A comment made by one farmer illustrates this complexity when he was talking about the likelihood that he will invest in new equipment for more environment and climate friendly handling of manure:

Well, yes, it's expensive, and you know, it's new technology that is demanding to learn (...), but first of all, it's the [shape of the] farm land, and it's too long distances [between the different fields]. (...) So no, I can't say I have seriously considered it yet. Maybe I should. But this is one of the things where I think the next generation here should be more active in the decision making. So I have waited, and not prioritized it. But of course, I see the big advantages with such equipment.

Even though the advantages of adopting new practises are evident to the farmer, many other factors, including economy, technological skills, topography, travel distances, and intergenerational relations, influence his ability to respond to climate change.

Economy is the major factor that influences farmers' ability to respond. One of the interviewees was farming organically and was ideologically more engaged with environmental issues than most of the other informants. He sought as much knowledge as

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> possible about how to run the farm in an environmentally friendly way. As this farmer

asserted, however, it is not enough to obtain knowledge and act on the basis of idealism if it is not financially sustainable, especially considering the large investments farmers have to make in new equipment or the expenditure required to hire external services:

If for example the authorities told us to dig new drainage ditches on the fields, I would really appreciate a training course on how to do it. (...) And it would not hurt with some economic motivation, like a support scheme encouraging such efforts. So if I had knowledge, training, and an economic surplus, then it wouldn't be a question (...) But I'm not interested in paying 100,000 kroner for an excavator to dig ditches in my fields.

The same farmer volunteered that he would like to have technology to utilize fertilizer, pesticides, and fuel in the most rational way, but in the current situation "it's too expensive." Many other farmers made similar arguments. For example, a farmer asked "what's in it for me?" as we were discussing the possibility of his transporting his surplus manure from pig breeding to neighbouring farmers with grass and cereal crops. Even though there is a common understanding that this would make the most of the available resources, it is not done because no one is willing to assume the costs.

Less visible than the economic hurdles, but perhaps just as important, are the social and cultural factors reducing farmers' ability to respond to climate change. Transmitting the farm to the next generational is important to many farmers (cf. Flemsæter and Setten 2009), despite being aware of the effects this conservative tendency can have in deterring desirable change in other areas. A farmer explained this dynamic when reflecting on his own history:

I think that on most farms, they will feel they are suffering a defeat if the farm don't go on [to the next generation]. For me it was a defeat when I had to give up having

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cattle. It's a break in continuity. That's a defeat. But on the other side, you should not be too conservative. Maybe we change too little.

Another farmer said that he raised sheep in addition to pigs and cows not to earn money from it, but because it is interesting, preserves the cultural landscape, and keeps the farm active; moreover, his children like the sheep. He emphasized the important bonds between the farm property and the family. When comparing farming to other small businesses, we find few other sectors where the business owners and managers have such historical and personal roots in their firm. One farmer on a very old farm contextualised his connection through a story showing both knowledge and attachment:

It's a "Rud"-farm; that means it is from the Middle Ages. The church owned it at one point. And then the Oslo Cathedral School, before it was sold to a farmer in 1784. Then a different family bought it in the 1800s, and then it was bought by my great, great grandfather in 1844. Since then it has been in our family.

We also find strong relations between economic and sociocultural factors, for farm succession, and even the aspiration of succession, plays an important role in decision-making on farms. Several farmers explained that without the prospect of succession, and if the successor had not taken part in the decision-making, major decisions involving significant investments would not have been made. These decisions might entail what farms should produce, whether to invest in expensive equipment, or even the fundamental question about whether to close down or continue the farm (Bjørkhaug 2012). The empirical material contains many concrete examples of how succession, or the lack of prospects for succession, influenced decisions. The ability to respond to climate change seems therefore to depend on intricate relations between economic and sociocultural factors.

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The perceived opportunity Norwegian farmers have to respond to climate change is contingent on both the economic and sociocultural context in which Norwegian agriculture operates. Many factors enable or inhibit actions related to climate change, and decisions are certainly based on more than a universal economic and ecologic rationality. Our analysis of the interview material suggests that, in order to increase farmers' scope for action concerning climate change and thereby make them more response-able, practises must be not only economically rational, but also socially, culturally and spatially valued.

8. Climate Citizenship and farming

A key characteristic of climate change discourse is that it clearly addresses the links between local action and global effects (Lindseth 2005, Cash and Moser 2000). This discourse is a mixture of arguments based on science and arguments based on politics and values (see, e.g., Hulme 2009, Moser 2010, O'Brien and Wolf 2010, Ryghaug 2011), but it is characterized by a seemingly disconnect between the science on the one hand and the policy response on the other (Helm 2010). Therefore, the climate change debate forces us to think through the assignment of responsibility and what we mean by responsible behaviour. Climate change also challenges our understanding of how individuals and institutions can act responsibly, as responsibility for the outcome is fundamentally shared (cf. Young 2011, Baer and Sagar 2010).

Citizenship regulates people's scope of action through defining formal and informal rights and duties in terms of belonging to a specific group (Chouinard 2009, Stevenson 2003). Environmental citizenship entails following certain rules and fulfilling certain expectations

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> (Wolf, Brown, and Conway 2009). Ecological citizenship, in contrast, involves rights and

duties pertaining to sustainability that are connected with each individual's ecological footprint. The ecological citizenship approach places *responsibility* for the sustainable development of the environment mainly on the individual. The environmental citizenship perspective, on the other hand, focuses on peoples' *responses* to policy initiatives and thereby places the responsibility for change on the government via regulatory measures and policy.

For farmers, *climate citizenship* is constituted at the intersection between individual moral viewpoints and state intervention in farmers' everyday practises, and thus involves both environmental and ecological citizenship. We emphasize the need to consider a reciprocal and mutually reinforcing relationship between structural and individual dispositions and instruments, by which responsibility is collectively shared but individually acknowledged. This perspective is in line with the model proposed by political theorist Iris Young: "Responsibility derives from belonging together with others in a system of interdependent processes of cooperation and competition through which we (...) aim to realize projects" (Young 2011, 105).

Our proposed climate citizen approach stresses that citizens might change their behaviour for both structural reasons (regulations and policies) and individual reasons (perceptions and attitudes). Equally or even more important, both of these motivations to respond to climate change are affected by farmers' *ability* to respond, which can be restricted by the sets of capabilities and sensibilities that demand or enable actions (cf. McNeill and St. Clair 2011, Brown and Dilley 2012). Moreover, responses are not only a product of reasoned recognition of universal principles, but determined and framed by individually and collectively based social and cultural factors.

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Norwegian farmers' current response to climate change is weak. This situation might change with increasing pressure and higher expectations from those outside the agricultural sector for agriculture to take greater responsibility for meeting national targets for GHG emission cuts. We have also highlighted two other reasons that might increase their response: self-interest, which might prompt actions to mitigate harmful climate changes and are likely to lead to actions to adapt to it; and legitimacy, which is necessary to justify continued support to agriculture. While many farmers recognize and reflect on the connections between climate change and agriculture, few take specific actions. What actions are taken are mostly based on economic motives and often connected to support schemes. The farmers we interviewed expressed a positive attitude toward economic incentives for climate friendly changes in farm practises and tend to place the main responsibility at the institutional level.

Current policy guidance is, however, quite vague; neither authorities nor researchers offer much guidance on how individual farmers can change their day-to-day farming practises as a response to climate change. Farmers experience a mix of signals, and to the extent they are encouraged to take certain actions, these often require major investments. When such actions are not particularly supported by sociocultural norms, they are less likely to be taken. Norwegian farmers' individually chosen practises seem not to be framed either by climate friendly sociocultural norms or by clear guidance and economic incentives from the authorities. This finding is underlined by our evidence that farmers generally acknowledge that responsibility for climate change is shared on different scales and between institutions and individuals, but we argue that there are few incentives through which farmers can fulfil their share of the responsibility. Norwegian farmers think that the concrete actions they can take without assistance are too limited to affect the global climate, and that the state should

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create regulations and economic support schemes in order to change farm practises in a more climate friendly way.

In Szerszynski's (2006) terms, in order to make the invisible more visible and make Norwegian farmers less "blind" to and "distant" from the global, non-territorial climate, their framework must include more than formal regulations and financial support through tangible relations between citizens and the polity. Social and cultural norms related to climate change are essential in constituting membership in a co-watching community of citizens (Szerszynski 2006). Local particularities must be connected to the global whole in informal as well as formal ways.

Farmers' lack of commitment to changing practises in a climate friendly direction is similar to, rather than different from, attitudes toward climate change among all Norwegians. As Kasa et al. (2012) have pointed out, attempts to mobilise consumers, local communities, and local authorities to change practises in a climate friendly direction have, by and large, failed, and Norwegians have been reluctant to incorporate adaptations to climate change into their everyday practises. We have no reason to believe that Norwegian farmers are either more or less likely to become climate citizens than other Norwegians.

9. Conclusion

The concept of climate citizenship can fruitfully inform the debate on responses to climate change among farmers as well as in the wider society. In Norway, the framework for climate citizenship in agriculture seems rudimentary. The agricultural sector plays an important role

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© 2017. This manuscript version is made available under the CC-BY-NC-ND 4.0 license <http://creativecommons.org/licenses/by-nc-nd/4.0> in Norway's obligation to cut GHG emissions, and it might become "part of the solution" by

binding and storing CO₂. A climate citizen approach suggests that farmers will have to change their practises for both for structural and individual reasons to be able to meet the climate change challenge. A key milestone in this respect is to connect responsibility for the global and non-territorial climate with the local, territorial, material and sociocultural dimension of the farm and for farmers. That goal can only be obtained by balancing and, indeed, integrating the environmental and ecological approaches to citizenship. A climate citizen both responds to institutional state regulations and policies and acts on an individual moral obligation to take personal and non-reciprocal responsibility for a global whole.

Major changes in farming practises seem highly unlikely without incentives from the authorities. Future policy initiatives should, however, strive to look beyond the traditional toolbox of regulatory and economic policy instruments. These might be effective to a certain extent, but stronger engagement from farmers in adapting to and mitigating climate change is also needed. Policy makers should take existing norms and values in the agricultural community into account when devising clear and manageable policies that farmers will be eager to adopt.

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