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Micro-level translation of GHG reduction - policy meets industry in the Swedish agricultural sector

Abstract

Reducing GHG emissions is an urgent challenge for mankind. However, as aggregate emissions continue to rise, necessary changes in industrial practices are lagging behind. The article addresses this discrepancy by exploring how the issue of GHG reduction is channeled from policy to industry, in one of the more GHG intensive sectors, agriculture. We adopt the translation perspective to analyze and discuss how the climate issue travels between contexts. Our study explores the activities involved as advisors, functioning as translating agents within Swedish agri-policy, inform producers about the issue of GHG reduction. The study sheds new light on the effectiveness of mitigation policy in promoting practice change and illustrates how translation is an analytical framework suitable for studying this within different industries.

Key words: Mitigation policy, translation, sustainable agriculture, greenhouse gas reduction, climate change

1. Introduction

Climate change represents an urgent challenge for mankind, and evidence that matters are worse than previously estimated is continuously revealed (cf. IPCC, 2013; UNEP, 2013; Rockstrom et al., 2009). Relentless rise in aggregate emissions and the notion of threshold effects provides little hope that climate change is something that can be managed through mere adaption (Steffen et al., 2011). Rather, the massive reductions in GHG emissions commanded, e.g. by the IPCC (2013), imply swift and radical changes throughout society, not least in industrial practices, e.g., energy, transportation, manufacturing and agriculture (Audsley and Wilkinson, 2014; Foley et al., 2011).

Although new carbon-efficient practices and technologies are spreading within industrial sectors, necessary change is lagging behind (Bonnedahl and Eriksson, 2011; Jones and Levy, 2007). One explanation is politicians' reluctance to put pressure on domestic industries in order to curtail short-sighted moves for competitiveness (Carter et al., 2011). This is further reinforced by the political trend towards governance, implying a greater influence of non-state stakeholders but also potentially weaker policy (Jordan et al., 2005; 2013). The lack of a forceful policy response to climate change, nevertheless, makes it important to understand the effectiveness of the mitigation policy that does exist.

Inspired by Jiao and Boons (2013) we understand mitigation policy as a dynamic process where a governmental body aims to provide intentional guidance to collective actions in order to reduce the sources or enhance the sinks of GHGs. Hence, we do not refer to policy as a particular instrument but rather as a sequence of events and efforts.

An apparent obstacle to the success of existing policy is that the issue of reducing GHG emissions is introduced from "outside" industry and its prevailing systems of

meaning (cf. Maguire and Hardy, 2009). Climate change mitigation is mainly championed by the global research community and the environmental movement. However, ideas regarding problems and measures need to be related to prevailing practice and made meaningful to industrial producers (Allan and Wilson, 2009). Since producers have more detailed knowledge regarding practices, more influence over the way practices are performed as well as greater possibilities in influencing peers, the meaning they make of issues are of great importance in shaping any resulting change in practices (Maguire and Hardy, 2009). Implementation may also be controversial as it could be expected that producers seek to defend prevailing practices against issues that introduce costs and challenge perceptions of the appropriateness and effectiveness of certain practices.

To understand such processes, in which climate policy meets industry practice, we draw on the translation literature which outlines how “entities”, e.g., policy issues, travel between and within contexts (cf. Czarniawska and Joerges, 1996; Jiao and Boons, 2013). This literature highlights, among other things, how issues change during travel (Czarniawska, 2009; Fadeeva, 2005). Examples are when technologies are shaped and used in unexpected ways (Orlikowski, 1992), when management ideas are filled with new meaning (Sahlin-Andersson and Wedlin, 2008) and when problematizations are reinterpreted (Maguire and Hardy, 2009). Here, “problematizations” should be understood as important aspects of issues, such as claims, examples and stories that substantiate the ineffectiveness or inappropriateness of practices (Colomy, 1998).

Not only may an issue change during travel, but the contexts which issues travel into may also change as an effect of these translations; for instance when aspects of traveling issues affect the meanings, shared among producers, that underpin practices (Zilber, 2002; 2006). An issue may challenge prevailing meanings by its accompanying problematizations, and thus, by reducing legitimacy, encourage more or less radical change, e.g., deinstitutionalization (Maguire and Hardy, 2009; Oliver, 1992). On the other hand, aspects of the issue may be translated so that prevailing meanings are kept intact, or meanings may be changed but not practices, so that prevailing practices are, e.g., relabeled as “climate friendly” (Stål, 2011).

According to the translation literature, it is not the initial strength or the seriousness of an issue, nor the power or prestige of its champion, that finally explains its spread, but rather the activities of different translating agents who pick entities up and send them on (Czarniawska, 2009). Hence, translations at micro-level arenas within the policy chain are important for exploring policy effectiveness. One such micro-level arena is where policy agents interact directly with industrial producers and hence potentially affect the meanings the latter make of the issue. We should expect that such policy agents perform an important role in translating aspects of the issue of GHG reduction, thereby potentially affecting the meaning of prevailing practice. Hence, the purpose with this paper is to explore the activities of translating agents, between policy and industry, in interpreting and disseminating the issue of GHG reduction, in order to enable a discussion on the effectiveness of climate mitigation policy.

To achieve this purpose, we draw on a case study of the introduction of climate mitigation advice within Swedish agriculture. Climate advice is an environmental

policy instrument (Jordan et al., 2013) offered directly to farmers, i.e., industrial producers. For Swedish policy makers, operating under the European Union's Common Agricultural Policy (EU CAP), provision of advice is an instrument in line with the governance trend, entailing participatory rather than coercive policy. We focus on agriculture as it is a sector of importance with a 10-12% share of global GHG emissions (UNEP, 2013), a percentage expected to rise due to population and economic growth (Foley et al., 2011; Vergé et al., 2007).

Firstly, the study contributes to research on the effectiveness of climate mitigation policy in promoting practice change by exploring an, in this context, often overlooked socio-cognitive aspect: meaning. Given the importance of farmers as decision makers it is critical to understand their reasons and influences, beyond reductionist notions of "economic rationality" (e.g., Blackstock et al., 2010). Secondly, it broadens the analytical repertoire within this research by showing how translation can be used as a tool. Thirdly, it contributes to the organizational branch of the translation literature by exploring aspects of how an outsider-driven issue (climate change) travels into an industrial context (e.g., Maguire and Hardy, 2009).

2. Theoretical background

There are many different ways of using the translation concept, perhaps because it has been applied in various fields, in a wide array of studies. In the ANT-literature (Actor Network Theory), translation, inspired by Callon's (1986) model, is known as the efforts involved in creating, shaping and sustaining socio-material networks (Brown and Capdevila, 1999). In this tradition, translation is closely linked to understanding interactions between humans and objects. More relevant to our focus on meaning is how the translation concept has been used in the study of social processes related to knowledge transfer (Gherardi and Nicolini, 2000), the dissemination of practices and ideas (Czarniawska and Joerges, 1996; Faadeva, 2005), management models (Sahlin-Andersson, 1996; Sahlin-Andersson and Wedlin, 2008) and problematizations (Maguire and Hardy, 2009). Of particular interest for our study of translating agents is recent work using translation to understand the interplay between how meaning is shaped and practices maintained or changed (Maguire and Hardy, 2009; Zilber, 2002; 2006).

In organization studies, translation is mainly defined as an alternative to the diffusion model which "connotes a transmission of a given entity" (Zilber, 2006: 283). The diffusing entity, typically a new idea, innovation or practice, is either adopted or rejected by the receiver (Rogers, 2010), and this outcome is explained through characteristics of the sender and the receiver (e.g., To and Lee, 2014). This has led to research favoring quantitative studies measuring whether, e.g., companies adopted a particular innovation or a particular management model (Sahlin-Andersson and Wedlin, 2008). However, qualitative researchers doing case research on implementation processes discovered that adoption/rejection are too crude as categories to describe what happens when new ideas or practices "touch ground" in a particular context (Sahlin-Andersson and Wedlin, 2008; Czarniawska, 2009). Instead, there are ample examples of reinterpretations, adding of new meaning, relabeling, invention and so forth (Sahlin-Andersson and Wedlin, 2008; Erlingsdottir and Lindberg, 2005). Thus, the translation literature views situations where entities

disseminate unchanged as exceptions (Czarniawska, 2009; Jiao and Boons, 2013). This is perhaps particularly relevant when the travelling entity is a policy issue, calling attention to the political and contested nature of climate change among stakeholders (Wittneben et al., 2012).

In line with such a position, we follow Zilber's (2006: 283) definition, stressing social aspects, of translation as "an interaction that involves negotiation between various parties and a reshaping of what is finally being transmitted". It should however be pointed out that the extent of this reshaping varies, including the unusual case where the entity is disseminated rather intact (Czarniawska, 2009). Moreover, it is not the advantages of a particular entity or the power and prestige of some original source (e.g. IPCC) that explain spread but rather the efforts of a variety of translating agents. Using a translation perspective means to focus the attention upon such agents, and in particular how they "influence the state of affairs by reshaping shared meanings" (Zilber, 2006: 300).

Subsequently, we focus on the pivotal role of meaning as underpinning practice (Zilber, 2002; 2006). According to this view, meaning substantiates legitimacy, i.e., "the generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions" (Suchman, 1995: 574). A higher degree of taken-for-grantedness in meaning suggests that practices are more resistant to change, as deviations from what is considered legitimate and self-evident claims or values are met with different forms of social sanctions (Jepperson, 1991). Further, most institutions require some form of "maintenance" (Lawrence and Suddaby, 2006; Micelotta and Washington, 2013) to reproduce practices and meaning, e.g., in the context of challenges to legitimacy. Institutional maintenance is not simply a process of replication, but rather of active translation involving different activities (Dacin et al., 2010; Zilber, 2009).

Nevertheless, as well as being maintained through translation activities, practices may change following acts of translations that together and over time influence their meaning. New interpretations could, for instance, render prevailing practices illegitimate (Maguire and Hardy, 2009). Maguire and Hardy (2009) use the example of DDT to explore how changes in the meaning ascribed to an industrial practice (spurred by the publication of "Silent spring" and dissemination of knowledge about the effects of DDT) overtime led to public outcry as well as regulations prohibiting the practice followed by a sharp decline in its occurrence (for similar examples, see Hoffman, 1999). In the extreme case, deinstitutionalization may be induced, if critique becomes normalized and accumulates into a new meaning, shared within the industry, of the practice in question (Maguire and Hardy, 2009). Alternatively, Lounsbury and Crumley (2007), suggest that practices may change as a consequence of a myriad of small variations which at a later stage are theorized, i.e., provided with new meaning by translating agents.

In order to analyze the translation of "our" issue, i.e., GHG reduction, we focus on two particular aspects. First, the issue may affect prevailing meanings of practices by its accompanying problematizations, e.g., claims, examples or stories, which substantiate the ineffectiveness or inappropriateness of the practices prevailing in an industry

(Colomy, 1998). For instance, in agriculture, ruminant cattle has been identified as a large emission source, reported on in widely circulated international reports (IPCC, 2007; FAO, 2006), debated in media and targeted through campaigns by the environmental movement. This in turn challenges the legitimacy of certain agricultural practices, e.g., beef or dairy farming.

As related cases, Wirsenius et al. (2009) discuss GHG taxes on meat from ruminant cattle as a way to reduce GHG emissions through reduced production, and the organic movement has problematized the use of synthetic fertilizers within conventional farming, lately by accentuating the GHG emissions during, and energy intensity of, fertilizer production. Such examples constitute individual acts of translation that, if accumulated and shared within industry may result in radical practice changes. On the other hand, problematizations may become down-played in such a way that meanings remain intact, reducing any impetus for change. Subsequently, in order to understand the translation of an issue, what happens with problematizations are particularly relevant to analyze.

As the second aspect focused here, stories and claims regarding the necessity or urgency for change implicitly or explicitly assign responsibility to different actors (cf. Dryzek, 1997). GHG reduction is more likely to result in practice change if industrial producers assume responsibility for the issue, and, in principle, farmers could implement measures immediately as they are largely in control of their practice (Blackstock et al., 2010). If the issue is assigned to some other actors' responsibility, e.g., consumers or politicians, it is likely that farmers will feel less compelled to take action (cf. Heikkurinen and Bonnedahl, 2013). Hence, how translating agents frame the responsibility for change is likely to affect how farmers understand the meaning of the issue, i.e., how it relates to their practice.

In sum, we consider translation as a perspective that assumes that a) entities (e.g., policy issues) change as they travel within and between contexts, b) the activities of translating agents are central for this, and c) meaning has a pivotal role for practice and practice change. Moreover, we focus our exploration upon GHG reduction as an issue that is transformed during travel, due to translation activities linked to the construction of meaning of prevailing industrial practices. In particular, we unpack translation by focusing our analysis on two aspects of the issue which potentially affect the meaning of practice and practice change: problematizations and responsibilities. A resulting change in meaning would, in turn, create an impetus for change. Through repeated iterations, occurring over time, this could introduce practice change within the industry but as discussed above, translations could also induce practice maintenance (Maguire and Hardy, 2009; Zilber, 2002, 2009).

- Insert figure 1 here -

3. Empirical background

Our case unfolds at the nexus of Swedish agricultural policy and industrial practice. A project called "Greppa Näringen"¹ (GN), has been running for 10 years, developing and designing educational modules containing advice and information regarding

various agri-environmental issues. The operations of GN, including the extension services, are jointly financed by the Federation of Swedish Farmers (LRF, the main industry association for farmers), and the Rural Development Programme (RDP, the national part of EU CAP). Moreover, the Swedish government's agricultural agency, the Swedish Board of Agriculture (SBA), and LRF jointly manage the project. Hence, it can be understood as part of a governance context, where industry and state actors cooperatively manage policy instruments (Jordan et al., 2013). The modules are utilized by advisors working at agricultural extension (AE) firms, as a special type of cost-free extension available to farmers. The advisor's role is to carry out farm visits where they provide information and advice regarding issues and possible measures in order to alter or improve related practices.

GN's attention to agri-environmental issues began by developing measures to reduce eutrophication of lakes, rivers and the Baltic Sea, caused by excessive fertilization (e.g., SBA, 2012). Compared to the approach in neighboring Denmark (a common referent in Swedish agri-policy), with its imposed quotas and regulated fertilizer usage, provision of advice represented a less confronting alternative. GN is also believed to be a success, as repeated measurements show that participating farmers have reduced fertilizer surpluses at their farms. There is, however, no way of knowing if this is due to advice received since data from farms that took part of advice has not been compared to the situation at non-participating farms (e.g., SBA, 2008a).

In 2008, GN personnel started developing a new module addressing GHG reduction. A starting point for the development efforts was to evaluate if advice within existing modules was consistent with GHG reduction. GN engaged experienced advisors and an industry expert (from LRF) and utilized various research reports that situated the GHG issue within the Swedish agricultural context. These efforts were influenced by experiences from other projects, where advisors together with farmers and researchers had investigated and calculated GHG emissions at the farm level. The basis was data from Life Cycle Analyses (Cederberg and Mattsson, 2000; Mattsson et al., 2000), detailing GHG emissions from soil to farm gate. Thus, there were several loosely related projects with a joint focus on measuring and exploring the link between prevailing agricultural practice, existing advisory modules and GHG emissions. These projects linked individuals from the advisory community with scientists – and through GN with the SBA, which had worked with climate change since 2002. During that time, it produced two reports on the issue (SBA, 2004; 2008b), describing emission sources within the sector as well as possible mitigation measures. In 2008, the government ordered SBA to go further in the mapping of current knowledge and to suggest strategies containing measures and policy instruments in order to reduce GHG emissions from the sector. The resulting action plan described provision of advice as an important instrument, but no reduction targets were set, neither for the sector as a whole, nor for GN's provision of advice (SBA, 2010; Stål, 2011).

A climate module was nevertheless developed and GN's climate mitigation advice was provided directly to producers, through farm visits and dialogue. This informational policy instrument constitutes a kind of intermediate, micro-level, interaction, where GHG reduction as a policy issue is disseminated into the context of the farmer. Of relevance for our study, advisors represent translating agents interpreting and

informing about the GHG issue in terms of what it means for farmers and their practice. Advisors, through their translations, contribute to making GHG reduction, as an issue, travel within the policy chain between GN and producers, i.e., farmers (cf. Zilber, 2006).

4. Method

As our purpose entails a focus on the activities of translating agents in interpreting the issue of GHG reduction, and its relation to practice change, we need data that allows us to capture these interpretations. Consequently, data consisting of advisors' text and talk regarding GHG reduction, and data about their interactions with farmers when presenting the issue, is required. We therefore employed qualitative methods: semi-structured interviews, document studies and participant observations (Eisenhardt and Graebner, 2007). Given the dynamics of the policy process, such methods are needed to grasp the nuances of policy effectiveness (Taylor et al., 2013). Our case consists of efforts within GN's climate module, focusing on advisors as translating agents, in interaction with farmers. A single case study is here motivated by our aim to illustrate how the translation perspective can be used, to discuss the effectiveness of mitigation policy (Eisenhardt and Graebner, 2007; Siggelkow, 2007). Hence, the single case study, allowing a more in-depth approach, fills a purpose in developing the conceptual argument.

We conducted a series of interviews with personnel responsible for developing the GN module – and then targeted the whole population of certified consultants at the time of the study. All 34 consultants (25 women and 9 men) were contacted through e-mail for an interview. Five of these operated their own consultancy firms while the rest were working for larger organizations. However, 7 never returned the e-mail, despite two reminders, 6 refrained from participating, claiming that they had conducted few or none farm visits, and an additional two declined as they had switched to other duties. Out of the remaining 19, 15 were interviewed once while four were interviewed a second time, linked to participant observations (see Table 2).

We mixed phone and face-to-face interviews since experiences from the first interviews convinced us that respondents were able to provide accurate descriptions over the phone. Subsequently, despite missing out on potentially important non-verbal cues, phone interviews were chosen to reduce GHG emissions from unnecessary travel as well as accommodate respondents with a busy schedule.

The interviews entailed open-ended questions regarding the purpose of the climate advice, what measures that are discussed, farmers' knowledge of climate change, details of the farm visit, and so forth. The questions were designed to make the respondents reflect freely upon the issue, and to provide rich accounts of how the issue was translated (Spradley, 1979). The interviews and observations lasted between 30 minutes and 2 hours, were tape-recorded (with two exceptions due to technical problems) and fully transcribed.

Regarding observations, the main author participated in five farm visits and the group meeting. The latter was a meeting arranged by consultant CÅ (see Table 2), to attract new participants as one central objective. The purpose with the observations was twofold: to validate that the accounts from the interviews corresponded to activities

during visits and to provide a richer insight into the translation. Observations from farm visits were recorded and transcribed, whereas field notes were taken during the group meeting. Documents describing the module as well as the reports produced by the consultants after the visits were used to verify accounts and to provide a context to the respondents' stories.

The analysis was performed in the following steps. First, interview transcripts were coded by the main author for reoccurring claims. This coding was then discussed among the authors and compared to the transcripts from the observations and to the reports from the farm visits. Next, these claims were structured into the two theoretically inspired themes (see Fig. 1), describing translations of problematizations and responsibilities. We then examined these results in relation to how they affected the meaning of practice and possible changes to that practice.

Reflecting on the interviews, advisors who had large experience with the module appeared more confident and certain as to how to frame GHG reduction and how they should perform their farm visits. They were also relatively content with the module while less experienced advisors sometimes expressed that, compared to other modules, this module and issue was more difficult and uncertain. In our description of the data we give more weight to experienced advisors' translations, as these are the ones that are repeatedly being spread among farmers. Experienced advisors have a greater chance of actually affecting how the issue is further spread and interpreted in the industry as they are concurrently in contact with a large number of farmers.

Generally these belonged to very small companies with a few employees (see Table 1), that were more specialized in performing GN's provision of advice. Other consultants belonged to companies which were more diverse with country-wide operations. These companies were also slightly larger with more than five employees as a minimum.

Topic	Respondent	Role	Organisation	Type	No. of consultations
Background (GN)	SO	Project manager Greppa Näringen	Swedish Board of Agriculture	Meeting	N/A
Background	AH	Responsible for development of climate module	Swedish Board of Agriculture	Meeting	N/A
Background	JK	Information officer GN	Federation of Swedish Farmers (LRF)	Meeting	N/A
Climate advice	CÄ	Consultant	Råby konsult (own)*	Phone + meeting***	>100
Climate advice	ED	Consultant	Vestgöte Dreber Gård & Konsult (own)*	Phone + meeting***	~40
Climate advice	BN	Consultant	Mulekonsult (own)*	Phone	~70
Climate advice	CaP	Consultant	Växtråd**	Phone	~15
Climate advice	AE	Consultant	Swedish Rural Economy and Agricultural Societies**	Phone + meeting***	~20
Climate advice	EH	Consultant	Swedish Rural Economy and Agricultural Societies**	Phone	~3
Climate advice	MiB	Consultant	Swedish Rural Economy and Agricultural Societies**	Phone	N/A
Climate advice	JH	Consultant	Swedish Rural Economy and Agricultural Societies**	Phone	~20
Climate advice	KB	Consultant	Rådgivarna**	Phone + meeting***	2
Climate advice	KE	Consultant	Rådgivarna**	Phone	5
Climate advice	MB	Expert climate advice*****	Växa Sverige**	Phone	N/A
Climate advice	CC	Consultant	Växa Halland**	Phone	N/A
Climate advice	CP	Consultant	Växa Gotland**	Phone	~12

Climate advice	IL	Consultant	Skanesemin**	Phone	2
Climate advice	MW	Consultant	Skanesemin**	Phone	4
Climate advice	SR	Consultant	Skanesemin**	Phone	4-5
Climate advice	MD	Consultant	Skanesemin**	Phone	1
Climate advice	CH	Consultant	LG Husdjurstjänst*	Phone	N/A
Climate advice	PN	Consultant	LRF Konsult**	Phone	~15
Climate advice	M	Farmer	Lilla Edet	Observation	N/A
Climate advice	MA	Farmer	Långelycke	Observation	N/A
Climate advice	Farmer A and B	Farmers	Fillinge mellangård	Observation	N/A
Climate advice	CO	Farmer	COGO AB	Observation	N/A
Climate advice	GM	Farmer	GM Farming AB	Observation	N/A
Presentation of climate module	Group**** meeting	Farmers	~10 farmers	Observation	N/A

* Smaller companies (<5 employees, more specialized)

** Larger companies (>=5 employees, more diverse)

*** In connection with farm visits

**** At which CÅ informed about the module and the results from one of her farm visits, to a group of farmers.

***** MB acts as adviser to the consultants in the field.

Table 1: Data collection

5. Findings

In this section, the activities of advisors involved in translating problematizations and responsibilities are presented using interview quotes. We then examine these results in terms of how they relate to the meaning of practice and the meaning of practice change.

5.1 Translating problematizations of agricultural practice

The overarching feature appearing in advisors' translations of problematizations is to defend and moderate critique. This is understood through translation activities of filtering, illustrating and simplifying, linked to a re-interpretation of critical claims. These different activities are described and exemplified below with numbered quotes (the capital letters following the quote indicates respondent, see Table 1). To begin with, respondents describe GHG reduction as a new perspective on agricultural practices:

(1) Climate advice is absolutely... it is new. This is a new terminology [...] to get the farmer to realize the whole – when we recalculate to CO₂-equivalents – what happens at the farm in terms of GHGs. And this is rather new, both for advisors and farmers to think about – what is really happening in the soil and in the animals (CC).

A series of well-spread international texts have introduced new problematizations of agricultural practices, for instance FAO (2006), *Livestock's Long Shadow*, which called attention to the total emissions of the farm animal sector (Deckers, 2010). IPCC (2007), in turn, adds CH₄ emissions from rice fields, CO₂ from organogenic soils and N₂O from cultivated soils to the list of major agricultural emission sources. In the context of GN, these texts (and others) have been further acknowledged in reports from the SBA (2004; 2008b; 2010). These reports concluded that, for Swedish agriculture, the main emissions stem from CH₄ from ruminant cattle, CO₂ from organogenic soils, and N₂O from cultivated land. Mainstream media has in turn acted as a disseminator and translator of these and other reports, which includes spreading information to the farming community. These translations in particular are blamed for the negative understanding of certain agricultural practices:

(2) Yes, it feels like media has blamed beef production for being a major climate villain (KB).

(3) Some [farmers] are worried about their organogenic soils and are wondering how they should manage them. I have been to quite many farms with organogenic soils [...] Well, they are wondering what they should do and how bad it is (AE).

According to the advisors, the different claims result in a generalized feeling, particularly among beef and dairy farmers, that they are being attacked:

(4) [...] there are many [farmers] that think that this with climate [means] that ‘we are only villains’, that we should not be producing any food because we are only destroying the environment (CP).

(5) They [the farmers] have been told that they are “climatically disgusting” – [that] Swedish meat, Swedish beef is a key culprit in this drama and they do not really understand the contingencies, what the circumstances are (ED).

Subsequently, advisors describe that farmers have both a specific and a general awareness of GHG reduction as a challenge to the legitimacy of their practice and, hence, to themselves. Here, it appears that advisors sympathize with farmers, and that they defend farmers and their practice against this critique. Advisors present the descriptions advanced through media as inadequate; they perceive that their task is to offer an alternative version of the issue and the critique, i.e. an alternative problematization.

(6) One thinks that sometimes media cry out that this is so much their [the farmers] fault (MW).

(7) They are in a defensive position when I start talking about climate, and that is because they do not really know that much about the subject, but they know that there is a lot of talk regarding the issue in society, and they are feeling attacked and they do not really know what this is all about (ED).

Here, advisors offer a re-interpretation of what they perceive to be media’s biased description. First, the myriad of claims regarding practice, perceived to be circulating in media, is filtered and simplified. Using a calculation program developed within the module, farm level emissions are selected and compiled into pre-set categories, describing what is “big and small”. The program produces a diagram which is shown to the farmer. It reduces the issue into 5-6 different stacks that show the major emission sources at the farm:

(8) I am sure you’ve heard about this concept, “big and small”, and that is also what most [consultants] are saying (KE).

(9) [...] utilizing our calculation program we calculate [emissions] for this specific farm and then we try to interpret and compare those results with information from other farms (MiB).

The somewhat vague problematizations that the issue introduces are illustrated through the calculation program and its diagrams. Farmers are presented with a figure for the annual emissions at the farm, as well as figures relating these emissions to the produce, e.g., emissions per liter of milk. Additional illustrations are also provided by the report that farmers receive after the visit. Hence, the somewhat vague accusation of being a “climate villain” is proven or denied in terms of figures and diagrams in a report. Although critical data and descriptions of emission sources are not being contested, it is established that the figures are not exact, and farm visits usually end in discussions regarding how this diagram should be interpreted.

(10) [...] the way I see it there is usually a lot of discussion (BN).

In such discussions, rather than to “dramatize the ineffectiveness and injustice of existing practices” (Colomy, 1998: 289), advisors appear to moderate the

problematizations. Emissions are described as necessary. The main argument is the perceived lack of existing alternatives:

(11) In my opinion there is not much that one can do (IL).

(12) So we have to accept that there are emissions. They cannot be avoided, but rather, it is about limiting them; that we can produce with as little emissions as possible (CC).

(13) The way I see it, there are not any major changes that the farmer can do that drastically will reduce emissions (KB).

This lack of alternatives is accentuated by arguments regarding the biological nature of emission sources, adding to their complexity; there is no quick fix to make a cow's digestion work in an alternative way. GHG emissions originating from other sources, e.g., the use of electricity and fossil fuels, are also targeted by GN, but since the relative size of these emissions are considerably smaller, they are not perceived as of equal importance (albeit easier to address).

(14) Partly, it [these difficulties] stem from the fact that there are complex biological processes behind these GHG emissions from agriculture, particularly N_2O and CH_4 (KB).

Hence, consultants convey to farmers that there is actually not that much that farmers can do. Food production without some levels of GHG emissions is described as impossible. Moreover, the claim regarding the necessity of practices such as beef and dairy farming is supported by references to current consumption:

(15) [...] then one has to discuss more [like]: 'we do actually want to eat beef and drink milk, so these emissions have to exist', so they [the farmers] should not take it personal, that they would be the worst villains. It is the way it has to be (MiB).

The analysis shows that advisors, through the use of the computer program, simplify, filter and illustrate circulating problematizations regarding agricultural emissions. Just like global and sectorial research on emissions and emission sources, this output basically shows that the practice is ecologically hazardous, i.e., that farms cause emissions which contribute to climate change. This is not questioned, neither by farmers nor by advisors, but problematizations are still moderated as emissions are interpreted as necessary.

5.2 Translating responsibilities

In addition to translating problematizations of practice, advisors are also involved in actively interpreting responsibilities. This appears to boil down to an assessment of how much responsibility society can place upon the farmer. Society, and what is loosely referred to as "the environment", is demanding something (a reduction of emissions) from the farmer. It is perceived as a legitimate demand, but advisors make the image of the farmer more complex by stressing individual differences concerning e.g., age, marital status, level of education and openness towards new information. Such differences are used to assess the type of responsibility that can be placed upon a farmer: An advisor would not expect as much from an old, uneducated or lonely farmer as from a young, vital and ambitious one.

(16) It's like a pyramid, the best one's are up in the top. They are so good that with them I am much more of a sounding board [...] They participate in a lot of agricultural extension, they read a lot, they are university trained. Maybe they are running a business with a turnover of many, many millions and they are well-informed about their business, unlike that small, small [farmer] who is born and raised on his farm, is 70 years old and perhaps has never

been outside...And you have to put on a level that matches the farmer but also the development stage of the company (CÅ).

Subsequently, depending on the characteristics of the person and their firm, passivity observed among some farmers can be excused. On the other hand, for the farmers “up in the top”, responsibility is related to the economic pressure they are said to be experiencing. If pressure is strong, they cannot be expected to devote time and effort to issues unrelated to the prosperity of their farms.

(17) I don't believe in moralizing. That does not work. You have to have specific solutions for the specific farm because the farmer is under so much pressure that he has no time to sit down for a few hours and listen to me talk about how he is going to save the world. That won't work (CÅ).

This can be understood as the farmer having a businessman's position for the advisors; responsible for important and pressing economic decisions that may have drastic consequences. A farmer may risk losing his or her farm. Therefore, one part of the assessment of the responsibility is a comparison of economic pressures: the more “business like” the farmer seems, the more pressured he or she is, and to assume responsibility can only be expected if it is justifiable in economic terms. In addition, responsibility is assigned elsewhere, with the consumer and the rest of society:

(18) Sure, emissions occur by you but one has to consider consumption, what can be done to reduce the climate impact of consumption. Because it's what's really guiding production (MB).

(19) ...and whether we should eat that many kilos of beef or drink that many liters of milk, which is not up to provision of advice and not really up to the farmer either, but in some way an issue for society at large (KB).

“Society” is perhaps considered to be particularly to blame, as it seems to point the fingers at farmers, while simultaneously importing less “climate friendly” food:

(20) It is the typical Swedish double standard if I may put it frankly. Because at the same time we are importing incredible amounts of food...(ED).

To sum up, responsibility is translated through activities that complicate the image of “the farmer”. This image is used to assess the responsibility that can be placed upon the subject as such. For some farmers, described as “businessmen”, this assessment relates the importance of the environment to business concerns, perceived as more important. In general, responsibility is assigned to consumers and the rest of society. The outcome appears to be a very limited responsibility for Swedish farmers.

5.3 The meaning of practice

The claim that emissions are an inevitable part of food production, in Sweden and all over the world, results in a new meaning of Swedish agricultural practice. This new meaning is a synthesis. It recognizes facts and claims regarding agricultural GHG emissions, but relabels efficient production, e.g., in terms of how much milk a cow will produce per year, as “climate-friendly”.

(21) So, the purpose is to some extent to get the farmer to pursue his production as efficiently as possible. That reduces the impact on climate (KB).

If all cows, or fields, inevitably emit GHG emissions, the goal should be to get as much produce out of these as possible, which will result in low relative emissions.

(22) [...] the organogenic soils would emit [GHGs] even if we hadn't been cultivating them, and cows would have been emitting even if we hadn't been milking them – but sure, if we would have had fewer cows, then it would have

decreased. The same thing there, the more you produce, the better it is, in most cases; if you break it down to each unit of beef or milk (CP).

Since GHG emissions are a global concern; some advisors conclude that food should be produced by the, in global comparison, most efficient producers. During the farm visits, some advisors relate Swedish production to agricultural production in other countries and focuses on emissions per unit of production. These figures indicate that some Swedish production is relatively good (e.g. Cederberg et al., 2009). In particular, Swedish dairy cows are highly productive, and Swedish beef mainly originates from dairy production. Hence, advisors argue that Swedish farmers should produce more, rather than less, food. Still, GHG emissions from imported soy are not negligible, and increased productivity could mean that more fodder is needed (SBA, 2012).

(23) I could turn it around and say that it's ok to increase the total emissions from Swedish agriculture assuming that we forcefully increase our production, and this is because we often have a climate friendly production and it would benefit the whole globe if we produced more food (ED).

Subsequently, by relating Swedish practice to some international examples, advisors show that climate change, as an issue, actually re-legitimizes Swedish agri-practice:

(24) And if we compare with other countries, Swedish producers are really good (CC).

(25) Swedish dairy production is really highly climate efficient since our production per cow is so high (KB).

These are presented and perceived as arguments that farmers can use when they feel under attack from media or others.

(26) [The purpose of provision of advice is] to increase knowledge and strengthen their [the farmer's] knowledge and possibilities of answering questions from their surroundings. It is about strengthening farmers and provide them with arguments regarding how they can think and reflect instead, and also point out that what they are doing, that [it] could be right[...] It is important to provide the right arguments (MB).

(27) I, who work with agriculture and am a farmer myself, I want this production to remain and have a value, and an increasing value, and then it is important to know your arguments: 'what is creating value in a society?' (KE).

Hence, advisors are involved in relabeling practice, as their translations provide prevailing practice with a new meaning, as "climate friendly". It is not about actually providing farmers with ideas about measures to reduce emissions, but rather to present new perspectives upon prevailing practice.

5.4 The meaning of practice change

In addition to the new meaning of practice, we find an interpretation of what type of practice change a farmer should strive for. As it is an efficient agricultural practice which is relabeled as "climate friendly", farmers should strive to improve their efficiency, e.g., output per animal or acre. Implementing such measures is also presented as good for the farm's profitability, hence a win-win-situation.

(28) I try to convey that this is about efficiency and then they understand and start to think that this is really fun. Then they can increase the profitability of their business (ED).

(29) If you can get the animals to grow well, use the fodder efficiently, then you get a good profitability and simultaneously reduce GHG emissions (MB).

(30) Luckily, what we have to do to reduce environmental effects goes hand in hand with increased profitability and enhanced production (CC).

Subsequently, change suggestions do not target the type of production, e.g., beef farming, but rather the level of efficiency within that particular production system. The GHG issue provides further reason for the farmer to improve efficiency. This approach has two advantages; first, farmers are likely to already be engaged in this type of change, constantly testing and improving their practices in order to increase efficiency. This is driven by market logic, i.e., those farmers that are inefficient will be replaced by more efficient peers. Historically, it has also been driven by governmental agri-policy, as part of the productivist tradition within agriculture (e.g., Morgan and Murdoch, 2000). And, second, it is also extremely practical for advisors who can reuse advice and information from other modules, e.g., on how to improve fodder or fertilizing efficiency, rather than invent entirely new measures:

(31) Yes, and I think that it is pretty simple, because often this [measure] goes hand in hand with the economy. If you look at the [cattle] “diet”, it is about producing as much milk as possible with the best possible “diet”, and that is good for everybody, all things considered. So in that aspect, it is easy to come up with advice and to motivate advice (CP).

Another aspect of advisors’ translations is the acknowledgement of measures already being undertaken by farmers without arguments related to climate change, e.g., driven by market logic, and relabeling them as “climate friendly”. In this sense their translations involve providing changes, unrelated to mitigation policy and provision of advice, with a new meaning.

6. Discussion

Much in line with the assumptions of the translation literature, when the issue of GHG reduction travels into a new context, our findings show how some of its aspects (problematizations and responsibilities) are created anew (Czarniawska, 2009). The various activities of translating agents involved in this are summarized in Table 2:

Aspects of the issue:	Activities of translating agents	Linked quotations	Example quote	Implications for effectiveness of policy
Problematization	Sympathize Filter Simplify Illustrate Moderate Interpret Defend	4, 5, 6, 7 1, 3, 8, 9 8, 9 8, 9 15, 16 12, 15, 16 5, 11, 12, 13	[...] then one has to discuss more [like]: ‘we do actually want to eat beef and drink milk, so these emissions have to exist’, so they [the farmers] should not take it personal, that they are the worse villains. It is the way it has to be (MiB).	Although translations recognize that agri-practices cause climate change, they reduce the impetus for practice change as a necessity, and effectiveness is accentuated. On the other hand, moderating the accusations apparently implied by the issue may increase farmers’ positive interest and motivation to act.
Responsibilities	Complicate Assess Relate Reassign	16 16 16, 17 17, 18, 19, 20	You have to have specific solutions for the specific farm because the farmer is under so much pressure that he has no time to sit down for a few hours and listen to me talk about how he is going to save the world. That won’t work (CÁ).	Although translations recognize the responsibility of some farmers, they reduce the impetus for practice change by relating it to other more pressing issues and assigning responsibility to other actors.
Aspects of the context:				
Meaning of practice	Synthesize Compare Relabel Re-legitimize	22 23 22, 25 24, 25, 26, 27	So, the purpose is to some extent to get the farmer to pursue his production as efficiently as possible. That reduces the impact on climate (KB). And if we compare with other countries, Swedish producers are really good (CC).	By disseminating the idea that Swedish agri-practice is, in comparison, climate-friendly, it could be understood that no further change is necessary. In addition it provides industrial producers wanting to fight tougher policy with new arguments.
Meaning of practice change	Interpret Reuse Relabel	28 29, 31 30	Luckily, what we have to do to reduce environmental effects goes hand in hand with increased	While eco-efficiency is a necessary component of mitigation policy it needs

profitability and enhanced production (CC).	to be coupled with measures that lead to absolute reductions.
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Table 2: Activities of translating agents

Initially, we assumed that translation could be a mechanism for practice change if aspects of the policy issue repeatedly came to affect the meanings of the prevailing practice. We opened up for the possibility that this effect could take different directions, ranging from practice maintenance to various radical changes, including the de-institutionalization of unsustainable practices, e.g., beef farming. Our analysis shows that shared meanings underpinning practice are affected, but in such a way that any radical change is ruled out, and while there is some practice change, there are also examples of practice maintenance.

In some contrast to our case, Maguire and Hardy (2009), in their aforementioned study of de-institutionalization of DDT, found that the prevailing practice was problematized as unsafe (for environment and humans), ineffective and unnecessary. After initial resistance, these problematizations, through several iterations, became normalized and accepted. In our case, it appears that it is accepted that agricultural practices, like other industrial production, have environmentally hazardous consequences due to their GHG emissions. However, existing agricultural practices are still perceived to be necessary. Advisors base their arguments for this necessity on the legitimacy of consumer demand and on biological complexities. Hence, translations are anchored in wide-spread market logics (cf. Zilber, 2006; Friedland and Alford, 1991) as well as in the (natural) sciences. No challenges to this necessity, e.g., alternative sources of food to satisfy basic human needs rather than consumer demand as expressed on today's markets, are mentioned.

The resulting meaning of practice does not reduce, but rather enhance, the legitimacy of Swedish agri-practice in general. Hence, it emerges as not only necessary but also effective, or at least efficient in producing many units of food per unit of emission. This partly explains why the translations reduce the impetus for more swift and radical changes, when such changes could be implied by the severity of climate change and the size of agricultural GHG emissions.

In addition, the responsibility to act upon problematizations of food production is assigned to others, e.g., consumers, inefficient foreign producers or society in general. Hence, market logic, a cultural belief system fundamental to contemporary society (cf. Friedland and Alford, 1991; Zilber, 2006), is used to interpret the issue. The potential wrongdoers among Swedish farmers appear to be the inefficient ones, who on the other hand could be excused due to lack of competence or resources. In this respect, climate advice coincide with the productivist tradition within agricultural extension; where industrial efficiency is promoted and reproduced as a virtue (Morgan and Murdoch, 2000). This tendency could be interpreted as a consequence of not including civil society organizations, such as the Swedish Society for Nature Conservation (SSNC), in the set-up of GN. SSNC promotes organic farming as part of a critique against intensive and specialized production methods.

The analysis also shows how changes in practices that are already occurring, the ongoing, incremental work among farmers to improve upon efficiency, are relabeled

as change towards GHG reduction. Here, advisors are engaged in theorizing, similar to descriptions by Lounsbury and Crumley (2007), where changes unrelated to the issue at hand, e.g., driven by market logic, are provided with a new meaning through the issue of GHG reduction.

Moreover, while a bit simplistic, advisors' arguments regarding win-win and "the business case for sustainability" echoes the discourse of eco-efficiency; the currently dominant industrial approach to environmental issues (Frye-Levine, 2012; Mol and Spaargaren, 2000; Orsato and Clegg, 2005). While the eco-efficiency discourse may be more sophisticated than the one expressed by the advisors, it still has its built-in flaws (Figge and Hahn, 2004; York and Rosa, 2003).

The main point which emerges is whether GN's eco-efficiency approach, as expressed in the activities and discourse of advisors, is effective in terms of reducing GHG emissions (cf. Figge and Hahn, 2004). If one adheres to this approach, relative improvements and more efficient production is the road ahead. Farmers may be important agents to enact such an approach, i.e., they know where to optimize within their production systems. It is therefore advantageous if they are motivated to pursue this path energetically, and translations that evoke feelings of being under attack and place farmers in a defensive position would be counterproductive.

Eco-efficiency, nonetheless, has an obvious pitfall if it is not coupled with the recognition of the need to put a cap on total emissions: if all producers focus on being as efficient as possible, it will still not, in case of rebound effects, reduce absolute emissions (Figge and Hahn, 2004; Høyer and Næss, 2001; York and Rosa, 2003). Whereas actors in our case could implicitly argue that Swedish eco-efficient production would replace less efficient production elsewhere, national policymakers around the globe can use similar arguments in favor of their producers, labor markets and constituencies, simply maintaining aggregate growth in production and emissions. After all, improving efficiency is, like profits and growth, a standard component of industrialized production. If this is the solution, how come emissions are consistently rising rather than decreasing (York and Rosa, 2003)? Moreover, if efficiency is the road forward, then market forces should be adequate in driving this and there would be little need for a particular climate policy. All in all, while improving efficiency may be an important component to GHG reduction and climate policy, there is a need for other interventions as well, such as reductions in the scale of production (e.g., Daly, 1990).

In addition, if the outcome of translations, through repetition, crystallize into dominant views among farmers and advisors, it may strengthen the idea that the responsibility for change should be assigned elsewhere, and resistance against a more forceful policy may be fueled. Hence, when considering the effectiveness of a policy measure, consequences for parallel policy initiatives as well as for future policy needs to be recognized.

What, then, could explain the observed activities of translating agents? Focusing on a subset of such possible explanations, certain aspects of embeddedness were detected through the case study. On the one hand, the market logics that permeate provision of advice as a consulting practice, and, on the other hand, the market logics that permeate

agricultural practice. Regarding the first-mentioned, Sutherland et al., (2013) in their review of different advisory services available to UK farmers, discuss the need among advisors to adapt to the views among farmers and display a strong “pro-farmer” attitude in order to attract clients. If farmers perceive climate change as an issue attacking their legitimacy, any advisor that provides a narrative which appears to reinforce this attack is unlikely to attract clients. Some of the advisors that have conducted the most farm visits, and thus appear to attract the largest number of clients, are also the ones that display the strongest “pro-farmer” attitude. Much in line with market logic, they have a message which is adapted to what their clients demand.

Regarding the second aspect, the practice of these clients is also permeated by market logic; the dominant interpretative frame through which farmers appear to understand their practice. Consequently, GHG reduction as an issue is re-interpreted in relation to this logic; advisors understand their counterparts as businessmen, adhering to this particular logic. Hence, the reason for advisors to utilize eco-efficiency arguments, e.g., regarding win-win and the business case for GHG-reduction, appears to be that they offer a way to adapt to this market logic while still recognizing the issue as such. Thus it would seem that the market logic provide boundaries within which translation occur in the studied context.

7. Conclusion

The purpose of this paper was to explore the activities of translating agents within parts of the policy chain and interpret the issue of GHG reduction in order to provide an understanding of the effectiveness of climate mitigation policy. Our results provide a rather bleak perspective upon this effectiveness, in terms of promoting swift and radical practice changes. Besides the lack of an overarching policy forceful enough, by focusing on micro-level arenas our case shows that there are translations when policy meets industry practice which induces practice maintenance. Much of the impetus for practice change is reduced through the activities of translating agents. On the other hand, the question of effectiveness is complex, and, in our case, it largely hinges on whether relative improvements, eco-efficiency, can be viewed as the path ahead (remaining critical to eco-efficiency, such measures could of course be useful if they are coupled with other measures in order to reduce absolute emissions).

If we firmly believe in eco-efficiency, the climate advice of our study may be effective as it deflected the perceived hostility amongst farmers. Keeping farmers positive towards their practice may spur willingness to carry on improvements, including capacity building in terms of learning new practices and measures to reduce their emissions, rather than becoming hostile and defensive towards the whole issue of GHG reduction. Hence, by focusing on an often overlooked aspect of policy, meaning, our study contributes to the policy debate. Moreover, our translation focus makes a contribution in terms of showing how activities in micro-level arenas shape meaning linked to policy effectiveness through careful consideration of power relationships and interests.

There are obvious limitations to the conclusions that can be drawn from a single case study, but our case is justified for illustrating a theoretical argument (Siggelkow, 2007) as well as for providing a basis for discussing mitigation policy. Moreover, our
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approach needs to be further developed and tested in other industries and in relation to other types of issues. In line with the argument for alternative approaches to policy analysis, e.g., ethnographic studies (Taylor et al., 2012), there is also a need for future studies utilizing translation as an analytical approach and probing different kind of arenas within the policy chain.

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ⁱ “Greppa Näringen” represents a play with words, as it roughly translates into “Capture/take-on the Agri-food industry”, but has a double meaning as ”näringen” also means nutrients.