What constitutes an effective voluntary dairy scheme?

Wie sollten effektive freiwillige Umweltprogramme in der Milchwirtschaft konzipiert sein?

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Summary

Attributes of effective voluntary dairy schemes were identified through a systematic literature review of 328 scholarly papers that describe and evaluate voluntary management schemes. Attributes were identified using NVivo software resulting in 15 common attributes which were subsequently assigned one of five attribute categories serving as building blocks for scheme design including: *Goals, Monitoring & Measurement, Incentives & Support, Communication & Involvement* and *Governance*. The resulting list of effective attributes is meant to assist policy makers and program designers in their efforts to increase scheme effectiveness and implementation.

Keywords: voluntary dairy schemes, environmental dairy programs, scheme or program design and effectiveness

Zusammenfassung

Diese Studie identifiziert Attribute von freiwilligen sozioökonomischen Umweltprogrammen in der Milchwirtschaft durch eine Überprüfung von 328 wissenschaftlichen Artikeln. Dies geschieht durch eine systematische Erfassung der wissenschaftlichen Literatur, die Erfahrungen mit freiwilligen Managementsystemen widerspiegelt. Unter Verwendung der NVivo-Software wurden 15 erwünschte Attribute zusammen mit übergeordneten Dimensionen identifiziert. Diese fünf Dimensionen bilden einen Rahmen, der ein wirksames freiwilliges Regelungsschema darstellt. Die Dimensionen sind: Ziele, Monitoring und Evaluation, Anreize und

Unterstützung, Kommunikation und Beteiligung sowie Governance. Als ein Ergebnis dieser Studie werden Vorschläge aufgezeigt, wie dieser Rahmen unter Berücksichtigung der Einschränkungen dieser Studie operationalisiert und quantifiziert werden kann. Diese Studie liefert eine Grundlage für politische EntscheidungsträgerInnen zur Gestaltung eines wirksamen freiwilligen Regelungsschemas für die Milchwirtschaft.

Schlagworte: Freiwillige Umweltprogramme in der Milchwirtschaft, Aufbau Umweltprogramm, Evaluierung der Ergebnisse

1. Introduction

While intensive rangeland dairy systems tend to be highly lucrative they also face significant environmental challenges in maintaining safe levels of water quality, water quantity, biodiversity and reduced contributions to climate change (MONAGHAN, 2008). This is particularly challenging for countries such as New Zealand where both dairy farming and maintaining a green and clean landscape image are vital to the New Zealand economy (HOULBROOKE et al., 2004). New Zealand dairy farmers are faced with increasing public, regulatory and market pressure to adopt sustainable farming techniques to mitigate these environmental impacts. The prevailing approach up to fairly recently has been to mitigate these impacts through relatively weak government regulations. However, over the last 15 years or so regulations have been increasingly strengthened, putting increasing pressure on the dairy industry to change the way farming is done. Tougher regulations are currently focused on improving nutrient management. Although a regulatory approach has been successful internationally in improving environmental conditions, it has also been criticised for being unduly rigid and inefficient (ANDREWS et al., 2001). In addition, farmers prefer a voluntary approach where they are given greater say in how they address environmental concerns. Therefore, in the last 15 years, the regulatory approach has joined with a voluntary approach led by dairy processing companies who have developed programs of required or recommended farming practices and outcomes for their farmer suppliers.

Despite the promise of this joint approach, little is known about the attributes of an effective environmental dairy program. While some scholars point to the effectiveness of these voluntary programs for

achieving improved environmental outcomes (ARORA and CASON, 1996; KING and LENOX, 2000), others question their effectiveness, and call for further research to their design (BALZAROVA and CASTKA, 2012; HELMS et al. 2012; HARRISON, 2002) and governance (CASTKA and CORBETT, 2014). These scholars argue for the need of greater credibility and effectiveness. DARNALL and SIDES (2008) argue that schemes are often designed with weak structures due to a desire to maximize scheme implementation among participants. A rigorous scheme with attributes intended to result in significant decreases in environmental degradation is often difficult to implement among farmers who are used to farming in a particular way and who view change as expensive. Thus there is a conflict between encouraging a scheme's wider adoption and mitigating environmental (and social) aspects through increased stringency (DELMAS et al., 2013).

A better understanding of the common attributes of effective voluntary agro-environmental programs is needed to assist dairy companies in their efforts to develop effective programs that are both rigorous and able to be implemented by their farmer suppliers. This research identifies attributes of effective agro-environmental programs through a structured literature review to assist in the development of such programs.

2. Methods

Scholarly papers describing and evaluating voluntary agro-environmental schemes were identified through a search of key academic portals such as ScienceDirect, Google (Scholar), Elsevier, SprinterLink and Wiley-Blackwell. The search started with looking for combinations of terms such as "effective", "experience", "adoption" of "codified management practices", "management standards", "guidelines", "initiatives", "code of conduct" or "ecolabels". Duplicated entries and papers that did not carry any information pertinent to this study were removed or omitted. This step created a reference literature database of 328 scholarly papers dealing with voluntary schemes, which were then analysed for factors responsible for program effectiveness. This phase generated a list of effective voluntary scheme attributes and their definitions, which were subsequently entered into the NVivo program to determine their

frequency of appearance within the papers identified. This confirmed the identification of desired attributes as common to all papers. The NVivo is a qualitative data analysis computer software program specifically designed for analysing complex multiple-source texts (BAZELEY, 2007). HUXHAM and VANGEN's (2000) coding procedure was then applied to the resultant set of nodes to identify possible relationships between attributes and identify similar attributes. This procedure resulted in a streamlined list of attributes that were then categorized into attribute types. This process followed several iterations where data was revisited to ensure consistent outcomes. Following this, the inter-rater reliability (IRR) test was conducted to assess consistency of the initial analysis (MILES and HUBERMAN, 1994, 50-67). The comparison of the results from three coders showed a high level of consistency with an IRR result of 0.92 which exceeds the common threshold reported in similar studies (POLLOCK and RINDOVA, 2003; DRUSKAT and WHEELER, 2003).

3. Results and discussion

There is a vast number of voluntary schemes. For example there are at least 216 corporate social responsibility schemes (POETZ et al., 2012) and 21 registered ecolabeling schemes (Ecolabelindex, 2015) with a specific focus on agribusinesses. The literature on voluntary schemes is very broad, extending across multiple disciplines, including economics (RENNINGS et al., 2006), management (GRAY and SHIMSHACK, 2011), accounting (HALBERG et al., 2005) and political science (GERMAN and SCHONEVELD, 2012). Research in this domain is underpinned by multiple bodies of theory, such as institutional theory, that typically points to disconnect between stated behavior and actual practice (e.g. BOIRAL, 2012), or just simply follow an exploratory study without any supporting theory (BALZAROVA and CASTKA, 2008). Literature evaluating codified management practices can be broadly categorized into three types: development of programs, diffusion of programs and adoption of program practices. Papers dealing with the *development of programs* typically addressed the setting of standards and stakeholder engagement during the process of standard-setting (HELMS et al., 2012; BALZAROVA and CASTKA, 2012). Papers in this category relevant to this study focus predominantly on "post-development" phases of standard

development, looking more specifically at various standards' diffusion aspects (CORBETT and KLASSEN, 2006) or performance aspects related to a specific standard (LEVINE and TOFFEL, 2010). Papers dealing with the *diffusion of practices* typically investigate patterns of deployment of voluntary standards such as ISO 14000. This type of research illuminates which countries, industries, and organizations have a greater affinity towards certifying their operations and also looks into the likelihood of future standard deployment (CASTKA and BALZAROVA, 2008 a&b). Lastly, papers dealing with the *adoption* of programs reflect upon their management and effectiveness following implementation. Some evaluate the effectiveness of a single management scheme (PACINI et al., 2003), while others identify barriers and enablers to scheme implementation (SCHNEEBERGER et al., 2002; BALZAROVA and CASTKA, 2008). Still others of this type look at factors that should be considered before adopting voluntary schemes (DELMAS et al., 2013).

The following section presents a summary of the framework that forms effective voluntary schemes. The framework captures five key dimensions of scheme's design. First, *Goals* defining the breadth and depth of a scheme's focus to mitigate the environmental and/or socio-economic aspects. *Goals* are often critiqued for being ill-defined and difficult to measure an achievement (BARTH and DETTE, 2002; DARNALL and SIDES, 2008); and requirements in terms of their performance-outcomes orientation vs practice-based orientation (BLACKMAN and RIVERA, 2010). For instance, an ambiguous goal like "outcome is to improve water quality" is too vague to be a determinant of scheme effectiveness, i.e. the scheme may improve water quality but not significantly in terms of mitigating environmental degradation. Other themes identified by the literature as relevant to setting *Goals* represent different elements of the strategic planning process. These include developing a scheme's vision and mission statement, and listing expectations, demonstrating commitments to continuous improvement, the purpose of the standard's implementation, identifying issues relevant to animal health and welfare, or addressing negative implications of dairy production associated with human and social aspects. Second, the *Monitoring & Measurement* dimension measures progress towards mitigating the environmental concerns and assesses to what extent a program is being implemented. These

evaluations are carried through first, second or the most preferred option of third party assessments (BLACKMAN and RIVERA, 2010; DARNALL and SIDES, 2008). Attributes in this category also measure the degree to which the program can assess and allow for incremental improvements through time. For example, to determine progress the progress must allow for the collection of baseline data from which to measure improvement (CONVERY and LEVEQUE, 2007; BLACKMAN et al., 2012; SEGERSON, 2013). Determining a baseline also allows for organizations to make specific objectives they wish to achieve, since they know the levels of outcomes or practices they currently achieve (HALBERG et al., 2005). Third, *Communication & Involvement* attributes evaluate the relationships between the scheme organizer and the scheme's audience. Strong credentials in this dimension can be demonstrated by transparent processes that can determine the origin of a product or its parts, or by having a strong relationship with farmers, or by having the scheme endorsed by the government (BANERJEE and SOLOMON, 2003) or by having an effective reporting mechanism with the public in place (DARNALL et al., 2003; GUNNINGHAM and SINCLAIR, 2002; MOFFET et al., 2004). Fourth, *Incentives & Support* attributes measure the degree to which direct and indirect aid is provided to scheme adopters. The success of a scheme is attributed to the adopters' perceptions of gained benefits (ALBERINI and SEGERSON, 2002; BANERJEE and SOLOMON, 2003; BARTH and DETTE, 2002; DARNALL and CARMIN, 2005). These can be attributed to availability of budget and funding that assist meeting the scheme's required targets (BLACKMAN and RIVERA, 2010), provision of a scheme's incentives (SYNLAIT, 2013) and access to knowledge and know-how on how to adopt a voluntary scheme effectively (BALZAROVA and CASTKA, 2008). Other aspects that complement incentives in a scheme's adoption focus more on the other side of the "carrot-stick" analogy. These are represented by sanctions that some authors feel increase scheme effectiveness (DARNALL and CARMIN, 2005; DELMAS and TERAAK, 2001; GUNNINGHAM and SINCLAIR, 2002; POTTS et al., 2014; PRAKASH and POTOSKI, 2007), penalties, or regulatory threats (KRARUP, 2001; SEGERSON, 2013). Fifth, *Governance* relates to the processes amongst actors and/or decision-makers that are involved in a solution to a collective problem that lead to the creation and reinforcement of social norms and institutions (HUFTY, 2011). A review of such papers suggests there is an increasing focus on

the importance of good governance as a key determinant of scheme effectiveness (HELMS et al., 2012; DELMAS et al., 2013; BALZAROVA and CASTKA, 2012). The ability of voluntary schemes to serve this function is constrained by the degree to which the scheme represents all major competitors who take part in the standard's development. Initiatives with limited representation from important market players in the governance process are likely to limit the scheme's success (POTTS et al., 2014). An example of a successful governance regime for voluntary standards is ISEAL standard-setting code (ISEAL, 2012). Furthermore, a multiple stakeholder standard development process has the potential to integrate stakeholders who might not otherwise have a strong voice in the supply chain. Over time, there has been increased pressure to engage in participative governance. Several schemes such as UTZ Certified, 4C Association, and GLOBAL G.A.P. were originally developed by their respective industries. Recently, trends appear towards designated multiple-stakeholder governance, and new standards such as Bonsucro and RTRS have been created this way (POTTS et al., 2014).

Findings of this study are summarised in a table that lists identified attributes along with their definitions, relevance to the dairy industry, key references and proposed metrics allowing for assessment of effectiveness of voluntary schemes. This study proposes to use mostly binary metric models for assessment or weighting the attributes strength on a scale 0 to 1. Attributes then, can be summarised for each dimension, averaged and compared to one another. This table is available upon request from the leading author of this paper.

4. Conclusions and outlook

The presented study provides in-depth insights into the designs and structures of selected schemes and assists a better understanding for future evaluation of scheme effectiveness. Despite contributions it has a number of limitations. Firstly, the study does not evaluate scheme effectiveness for mitigating environmental and social issues; secondly it does not study adoption rates and the level of scheme deployment. Future research can thus focus on relationships between a scheme's design and a scheme's effectiveness after its adoption.

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