

BEFORE THE HEARINGS PANEL

IN THE MATTER OF

hearings on submissions
concerning the proposed One
Plan – FARMS Strategy section
notified by the Manawatu-
Wanganui Regional Council

**STATEMENT OF EVIDENCE BY Dr Neels Botha
ON BEHALF OF FISH AND GAME WELLINGTON**

1. INTRODUCTION

My qualifications/experience

1. My name is Dr Cornelius Alewyn Johannes BOTHA. Most people call me Neels. I am a social researcher and the social research team leader within the Agriculture and Environment (A&E) Group at AgResearch, based at Ruakura, Hamilton. I have a Bachelor's degree in Agricultural Science (The University of Pretoria), Honours and Masters Degrees in Extension and a PhD in Agricultural Extension and Rural Development (The University of Pretoria).

2. I have almost 10 years work experience with AgResearch plus the research experience gained during my employment with the University of Pretoria (14 years) and field experience as an agricultural extension officer in Namibia (8 years). My research projects focus on (i) understanding the adoption of innovations predominantly in the pastoral industry, for example new technologies or farming systems, and (ii) designing interventions and systems that encourage behaviour change. My technical speciality is in designing innovative agricultural extension systems. Much of my current research focuses on policy impact assessment and improving the impacts of research, development and extension in the dairy industry. I currently lead several Foundation for Research Science and Technology (FoRST) objectives that aim to understand and improve the adoption of technologies by the pastoral sector. I have authored more than 50 peer-reviewed publications and numerous technical reports.

3. I acknowledge the contributions to this report from my colleagues Ms Tracy Payne, a social scientist, Dr Upananda Paragahawewa an agricultural economist, and Dr Paula Blackett, a geographer and fresh water ecologist, who all work for the AgSystems group based at AgResearch, Ruakura. Tracy has 5 years research experience, Upananda has 8 years research experience including his PhD study and Paula has 10 years experience including her PhD study. They all have a strong background in the adoption of innovations and have done policy related research in the context of policy options for mitigating non-point source pollution in the pastoral sector.

4. I have read the Environment Court's practice note 'Expert Witnesses – Code of Conduct' and agree to comply with it.

My role in One Plan

5. I have not been directly involved with the development of the One Plan proposal, other than having read Ross Monaghan's section 42A evidence on behalf of Horizons Regional

Council, and Fish and Game Wellington's "One Plan Overview". I also lead and was directly involved in studying the adoption by farmers of Horizon's Whole Farm Plans.

Scope of evidence

6. To establish a shared view of what "voluntary approach" means, a brief discussion is given followed by theoretical views and practical evidence of whether voluntary approaches actually work or not. Along the same lines I provide a brief discussion of the meaning of "regulatory approach" and whether it works or not. This is followed by an overview of whether it is a choice between a voluntary or regulatory approach, first from a theoretical and then from an evidence based perspective. Using evidence from Europe and Scandinavia on the use of voluntary and regulatory approaches as a basis, I emphasise in my evidence that neither voluntary nor regulatory approaches work well on their own. The solution for improved policy impact is in getting the mix right, not in choosing the single "best" option. New Zealand research about nutrient budgets and natural resource management and farmers' attitudes about them is also briefly documented, and followed by a discussion of New Zealand (case study) farmers' concerns about changing their farming activities to become friendlier towards the environment.

2. EXECUTIVE SUMMARY OF EVIDENCE

7. Although scholars appear to be in two camps about the meaning of "voluntary approach" their views overlap sufficiently to say they have general consensus. But in their discussions it is clear that voluntary and regulatory are usually linked up in some way. Some authors use the well-known "carrot" and "stick" analogy to indicate that voluntary approach means that participants receive either rewards or penalties for doing the right or wrong thing. Other authors use three types of voluntary approach, based on the source and extent of action taken. The three types is unilateral action by "polluters", bilateral agreements between regulators and polluter(s) and voluntary government schemes. From a theoretical point of view, voluntary approaches can work, but only if certain criteria are met. These criteria have to do with: a credible enforcement threat that regulators can fall back on if voluntarism fails; a monitoring program, which is implemented by a respected and independent third party; and if there is peer sanction for underperformance (from Blackett 2004). However, there is now a lot of evidence from Europe which suggests that voluntary agri-environmental measures may not be effective in inducing permanent change in farmers' attitudes and behaviour. Where farmers have adopted voluntary schemes it was due to a combination of two factors, first, the action was compatible with commercial interests and second because the action required very little change to their farming system. When a regulatory

approach is taken, a third party establishes acceptable farming activities (behaviours) to which farmers must comply or they will face enforcement. There are two main components of regulation, firstly the construction and application of rules, and secondly the enforcement process. Although enforcement is important, Governments often do not take adequate enforcement measures. A failure to meet standards must incur significant costs to the polluter, and be coupled with a high chance of getting caught. There is no evidence from literature that a regulatory approach by itself is sufficient to effectively generate behaviour change. Research has shown that there is a good case to be made for a “mixed approach” and from a theoretical perspective regulation is now seen as a “necessary aspect” of the design and use of new environmental policy instruments. Voluntary and regulatory approaches are now best thought of as ends of a continuum rather than as the sole choices. The European Union, for example, has become very reluctant to adopt voluntary agreements entirely free of a legislative superstructure. Case studies have shown that New Zealand farmers’ attitude towards nutrient budgets is that it is a tool for specialists. Farmers are also disinterested in using nutrient budgets to assess potential environmental impacts of their farming activities, and they are seen as a policy requirement. Industry and local government policies help create a framework or context within which on-farm decisions are made, and these decisions are reflected in farming activities. In several New Zealand case studies it was found that industry policy actually convinced farmers to get nutrient budgets, not farmers’ own volition. Partly explaining this finding, social research in the Lake Taupo catchment has described the conditions that make it hard for farmers to adopt and use environmental technologies. This and other research have shown that farmers have some basic concerns when it comes to making changes to their farming activities and that policy development and implementation should take these concerns into account or face poor farmer responses. Stand-alone voluntary or regulatory approaches do not bring about changes in farming activities, a policy mix is required.

3. Evidence

What is a “voluntary approach”?

8. In literature some authors discuss two and others three types of voluntary approaches. Segerson & Miceli (1998) for example classify voluntary approaches into two types: those that induce participation by providing positive incentives; also called the “carrot” approach; and those that induce participation by threatening a harsher outcome if a voluntary agreement is not reached: the so-called “stick” approach. Other authors like Lyon and Maxwell (2002) and Rivera 2002 (cited in Moulton & Zwane, 2005) describe three types of voluntary approaches. The first type is where a single polluter or a group of polluters take unilateral action, without any regulatory

involvement. With this approach the polluters themselves initiate abatement actions. Regulators do not play an active role but they can assess progress. A second type of voluntary approach is a so-called bilateral agreement between a regulatory agency and polluter or group of polluters. The terms of agreement are determined by negotiation between the regulator and the polluter(s). The polluter's obligations under these agreements generally involve certain pollution abatement activities that will be undertaken. The regulator's obligations might include: 1) a commitment not to take enforcement actions against the polluter; 2) an agreement to exempt the polluter from certain environmental regulations; 3) a commitment to provide specified financial or technical assistance; or 4) an agreement to grant a particular permit or approval for other activities. Blackett (2004) showed that environmental initiatives by industries may stem from a desire to improve environmental performance (and public perceptions), peer pressure or concern that the government may otherwise impose regulations. She argued that "initiatives can take several forms; self initiated self monitored targets, and government and business negotiated targets, government initiated targets which businesses are challenged to meet" and that "actions may be unilateral or involve an entire industry or sector". The third type of voluntary approach is a voluntary government program, under which the regulatory agency unilaterally determines the rewards and obligations from participation, as well as the eligibility criteria. This type of approach is frequently promoted in non point source (NPS) control where governments provide subsidies to encourage the (voluntary) adoption of environmental best management practices (EBP) (Dowd et al., 2008). For example, riparian planting in sensitive catchments.

Do voluntary approaches work?

9. *Theoretical perspectives:* Taplin (2004) indicates that there is a theoretical assumption that new environmental policy instruments (voluntary agreements) will have greater effectiveness and efficiency than old instruments, such as Government regulations. To start off with, voluntary approaches can only work if people actively participate in them. Individuals have to find it profitable, or worthwhile, to participate in voluntary programs (Moulton & Zwane, 2005) and this profitability can be found in active government support, co-ordination and local technical and ecological expertise (Mason et al., 2005). The effectiveness of any approach, whether it is voluntary or regulatory, is measured by the level of environmental protection that is achieved. Apart from the number of participants, success is determined by the amount of pollution abatement undertaken by each participating polluter, and the impact that the approach has on the number of polluters (Alberini & Segerson, 2002). Hence, there is no straightforward answer to the question: "do voluntary approaches work"? As a rule of thumb Moulton & Zwane (2005) said that the most effective voluntary programs target industries whose participants value good environmental performance and provide a means for participants to credibly signal their environmental performance. According to Dowd et al., (2008) voluntary programs ought to work

if: 1) there is a credible enforcement threat that regulators can fall back on if voluntarism fails, and to make this threat more credible is to structure the voluntary approach as a waiver or exemption from an already existing regulation or tax; 2) there is a monitoring program, which is implemented by a respected and independent third party; and 3) if there is peer sanction for underperformance. Hence, from a theoretical point of view, voluntary approaches can work if certain criteria are met. How do these theoretical views stack up against practical evidence?

10. *Practical perspectives:* One of the main mechanisms used in agri-environmental policy is the provision of financial rewards or penalties for performing/not performing environmental actions. In Europe, this approach formed the cornerstone of the so-called McSharry revisions to the European Common Agricultural Policy (CAP) which encouraged farmers to engage in voluntary agri-environmental schemes through government incentives. Some commentators expected major changes to result. For example Lowe et al. (1999, p. 271) asserted a decade ago that “it would reasonably be expected that there would already be discernable changes in farmers’ attitudes, and even farming cultures, from participation in agri-environmental schemes”. However, while these voluntary approaches schemes have been successful in terms of the amount of land entered into the programs (in 2002 over 30 million ha were covered by agri-environmental schemes in Europe), researchers in Austria (Schmitzberger et al., 2005), Finland (Herzon and Mikk, 2007), Ireland (Aughney & Gormally, 2002), Switzerland (Schenk et al., 2007), the Netherlands (Kleijn et al., 2004), the UK (Macdonald and Johnson, 2000) and other countries have found little evidence that farmers’ attitudes have changed despite almost two decades of engagement. Similarly, Burton et al (2008) note that there is a lot of evidence from Europe which suggests that voluntary agri-environmental measures may not be effective in inducing permanent change in farmers’ attitudes and behaviour. This is an important point because it means farmers have changed their behaviour not because they believed it was the right thing to do, or because they wanted to, but for other reasons. Where farmers have participated in voluntary schemes it was because of their own commercial interests and they did not have make big changes to their farming systems (Burton et al 2008).

What does “regulatory approach” mean and does it work?

11. Statutory regulation has been described by De Witt (1994) as “framing rules of behaviour that are applied to specific individuals or organisations through an enforcement process”. Hence, in an agricultural context, when a regulatory approach is taken, acceptable farming activities are established and described in a set of rules. Farmers must comply with these rules or face enforcement. Mandatory policies, which include regulatory control, place the burden and the costs of pollution control on those who generate the pollution (Howarth, 2005). When a regulatory approach is used, farmer are required to only meet the minimum level to achieve

compliance and they have no incentive to go beyond this (Stobbelaar et al, 2009). But the approach is appropriate for those farmers who will not take action unless they are forced to (Withers et al., 2000). According to May (2005) regulations are more effective than voluntary approaches on their own, because the motivation for action relies on fears and a sense of duty to comply. Regulations can play a role in ensuring greater adoption, but caution is needed as the on-the-ground implementation of a regulation may not be the result of the regulation itself. Stream fencing, for example, was done by farmers because it made life easier for them in terms of stock management, not to enhance water quality (Bewsell et al, 2007).

12. There are two main components of regulation, firstly the construction and application of rules, and secondly the enforcement process (Blackett, 2004). Enforcement plays an important role, but compliance with many agri-environmental programs fails to meet expectations due to enforcement difficulties (Marshall, 2004). While Government can initiate rules around natural resources, they often lack adequate enforcement. Blackett (2004) has indicated that: 1) for statutory regulation to be effective it must be well and easily enforced; 2) to deter non-compliance a significant cost must be associated with failing to meet standards and; 3) if costs of non-compliance are not greater than cost of compliance or the chances of getting caught are minimal then regulation will not be successful in changing behaviour and achieving improved environmental outcomes. Sometimes policies are not effective because of how they came about and are implemented. Social aspects of the people who have to comply with the rules are very important, or run the risk of failure. Stobbelaar et al., (2009) for example argue that policy developers should attempt to get people to “make the policies their own”, or to internalise them. They say that this could be done by tuning the policy instruments to the specificities of farmers’ motivations. Archer and Marks 1997 (cited in Withers et al., 2000), show that experience in Europe with the Urban Waste Water Treatment Directive (UWWTD) and Nitrates Directives (ND) indicates that regulatory measures are slow and difficult to implement because of the desire for economic and social stability by participants and their ability to challenge assumptions in the courts. If these policies were better tuned to what motivate farmers, they would have been more effective.

13. In summary, there is no evidence from literature that a regulatory approach by itself is sufficient to effectively generate behaviour change.

Voluntary or regulatory approaches?

14. *Theoretical perspectives:* Research has shown that there is a good case to be made for a “mixed approach”. In this regard Segerson & Wu (2006) have suggested a policy which combines a voluntary approach with a background threat of a tax or losing government subsidies if the voluntary approach is unsuccessful in meeting a pre-specified environmental goal. They indicate that the threat of regulation can be an effective mechanism for getting people to participate in

voluntary agreements. Howarth (2005) argues that because the threat of regulation is such a powerful motivator for voluntary compliance, a hybrid approach is needed where regulations are part of the mix, rather than relying on voluntary programs alone. Further, Jordan et al (2003, cited in Taplin, 2004) argues that regulation is a “necessary aspect” of new environmental policy instruments’ design and use. Howarth (2005) also discussed how the best solution may involve a combination of voluntary and mandatory approaches, applying different approaches to different sources of nitrogen pollution. Lyon and Maxwell (2002, p.109, cited in Dowd et al., 2008) argue that “voluntary activity is a complement to a regulation, not a substitute”, and Steelman & Rivera (2006) described voluntary programs as “valuable tools that can supplement the regulatory toolkit”. May (2005, p.31) sums it up well by saying that voluntary and regulatory approaches “are best thought of as ends of a continuum rather than as the sole choices”.

15. *Practical perspective:* Jordan et al (2003, cited in Taplin, 2004) showed how the European Union has been reluctant to adopt voluntary agreements entirely free of a legislative superstructure because of: 1) the suspicions or mistrust of environmentalists; 2) perceived transparency problems with voluntary agreements; 3) officials’ concerns about long-term enforceability and effectiveness, and 4) some industrial actors’ preference for traditional regulation because of its ‘level playing field’ nature.

New Zealand farmers, their farming activities and the environment

16. *Nutrient budgets.* Case studies in five catchments have shown that farmers voluntarily complied with the requirement to have a nutrient budget. Their attitude is that a nutrient budget is a tool for a specialist to use and that they did not want to get involved in developing the nutrient budget for their own farm. Nutrient budgets were done for them, but farmers retained the choice how to respond to the recommendations that were derived for them by fertiliser reps, from the budget. It was, and still is, their personal decision how they respond and what they do with the recommendations. Farmers were not interested in using nutrient budgets to assess potential environmental impacts of their farming activities. In two of the catchments, farmers regarded the need for a nutrient budget as a Fonterra requirement and not as a result of the ongoing catchment research activities in their area. It became evident that industry policy convinced farmers to get a nutrient budget rather than any altruistic desire to reduce their environmental impacts. This has shown that an understanding of the influence of industry policy or strategy, or lack thereof, on farmers is critical. In this case Fonterra’s influence convinced the farmers in the study catchments to change their farming activities (behaviour). Industry and local government policies help create a framework or context within which on-farm decisions are made. Adoption (behaviour change) never takes place in a vacuum, but it happens in particular contexts. Policy (e.g. rules, regulations, incentives and disincentives) is a key part of that context. As far as encouraging voluntary change in communities or individuals is concerned, three ways of working with participants are possible: doing to, for and with. In terms of encouraging changes in on-farm

activities “doing with” (i.e. partnerships) are the most effective way. Personal responsibility is important; hence building a sense of personal involvement in an issue is a good starting point in any strategy for voluntary change in environmental practices.

17. *Natural resource management.* Our research in the catchment of Lake Taupo explored the factors which affect voluntary adoption of technologies. We concluded that farmers find it hard to change their farming activities (adopt environmental technologies) when: 1) their impacts have low visibility, are hard to measure and are off-site; 2) tools to measure their effects are unavailable; 3) there is a substantial time lag between the use of the technologies and their effect; 4) farmers can't test these technologies and don't trust the science behind them, and; 5) technologies don't not line up with farmers' views of what it means to be a 'good' farmer. Any one of these factors may prevent change, but there is an inverse relationship between farmers' use of new technologies and farming practices and the number of these factors; change decreases as the number of factors increase. Several issues impacted on whether farmers' willingness to change their farming practices in the Taupo catchment study: 1) There were insufficient drivers for farmers to change their farming activities; 2) The level of responsibility that farmers felt they had for environmental effects was low; 3) Risks associated with making rapid changes were high; 4) Farmers' lacked confidence in some of the research into new practices; 5) they did not know the financial implications; 6) Sufficient social support for change was lacking. At that time the conclusion was that, in this particular case – for farmers to sufficiently protect or enhance water quality in the Lake, extension or education wouldn't work as a standalone approach, because: education and communication activities only work for adoptable technologies; not being aware or not knowing about the problem or solutions was not an issue; farmers' lack of capacity to make decisions or choices was not an issue. The recommendation was that other policy instruments or combinations thereof should be considered, for example; incentives, disincentives, market based instruments, and regulation/rules. This research supports the notion that stand-alone voluntary or regulatory approaches would not affect farming activity changes. This and other research have shown that farmers have some basic concerns when it comes to making changes in their farming activities. Depending on the context and who the farmer is, and in no particular order of importance, these concerns are described in the next point.

18. *Farmers' concerns when thinking about changing their farming activities (practices/behaviour).* Very early on in their decision-making process farmers have concerns about responsibility and duty. They want to know or be convinced that the problem is real, that it is there and that it is theirs. They want to be confident that the problem exists and that it is their responsibility and duty to do something about it, to solve it. Farmers are also concerned about evidence. They want to have the security of knowing that the solutions that are presented to them will actually solve the problem or address the issue and that it is underpinned by good unbiased research; that it is science based. That is why the visibility and measurability of the impacts of the

solutions they are considering are so important to them: for most farmers, like for many other people, “seeing is believing”. Farmers ask the basic question: “what’s in it for me?” They are concerned about a value proposition, so they consider the perceived costs and benefits of the solution(s). Farmers firstly want to know what the implications of adopting the solution/s are in terms of lifestyle/stress and income (dollars), and then some of them are concerned about environmental impacts of the solution(s). They try to work out what will happen if they change their farming activities, and many of them need assistance with this “sorting out” process, especially when there are multiple impacts and consequences. Farmers are concerned about the full (holistic) picture. They don’t separate environmental, financial and lifestyle impacts which changes in farming activities bring. When the potential solution(s) don’t easily fit with their current farming system, they are concerned that adapting to and then running the adapted system may be too hard, too costly from a personal and financial perspective and too disruptive to the current farming system and activities. Some changes can be very disruptive and that really concerns them. At a personal level, farmers want to have the confidence that they have what it takes to make the required changes. They, often privately, have concerns about their own abilities and also about the personal and other consequences of failure.

19. Disregarding farmers’ concerns about changing farming activities when policies are designed means that they are highly likely to be ineffective and inefficient, whether it is voluntary or regulatory.

20. In conclusion, it is my view that Horizons regional council is on the right track, because they do not follow an “either or approach” but a policy mix.

Neels Botha

7 October 2009

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