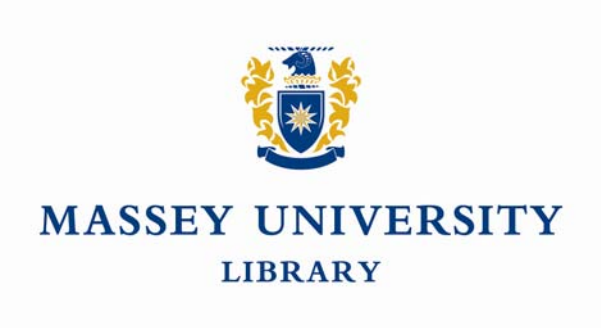

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A case study of Cambodian small-scale farmers

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Abstract

This paper investigates the impact of organic agriculture development initiatives on the wellbeing of small-scale farmers in Cambodia. Wellbeing was measured subjectively, with fifty seven organic farmers asked what is most important in their lives, and the impact of the organic initiatives assessed in these areas. Farmers in the study considered the ability to grow sufficient rice for their family as most important, followed by family health, and having enough money. The organic initiatives were found to impact positively on all these dimensions of wellbeing. Family food security increased in all cases, health increased in all but one case, and income increased in all cases.

Key words: organic agriculture, Cambodia, wellbeing.

Biographical Note

Alice completed her Master's in Development Studies at Massey University in 2007. Her thesis examined the current use and potential of organic agriculture in Cambodia. She currently works as an Information Officer at Dev-Zone in Wellington.

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Introduction

Agriculture appears to be back on the development agenda after almost fifty years of neglect. From 1960 to 2006, agriculture's share in Official Development Assistance slipped from 17 to 3 percent (Diouf 2008); now the international community is responding to recent price rises for farming inputs and grains – the 'food crisis' – by pledging increased food aid and rural investment. However, food aid alone will not solve the problem. The inequitable structure of the global agriculture system, which has contributed to increasing power amongst multi-national retailers and seed/chemical companies, inadequate investment in infrastructure for small-scale producers in developing countries, and increased demand for productive land and water, must arguably be changed for long-term development.

Many farmers as well as multilateral institutions such as UNESCAP (2002) believe that organic agriculture may offer a comprehensive response to the sustainability problems facing agriculture, rural communities and food production system. Most empirical studies of organic agriculture to date have focused on production aspects (Holt and Reed 2006), but a growing literature analysing the social impacts of organic agriculture initiatives is showing positive potential for poverty alleviation and increased wellbeing. The recent *World Agriculture Report*, which utilised the work of over 400 scientists, concluded that agriculture needs to adopt:

> policies that promote sustainable agricultural practice…stimulate more technology innovation, such as agroecological approaches and organic farming to alleviate poverty and improve food security (IAASTD 2008:33).

In the South-East Asian nation of Cambodia, little empirical study into organic agriculture initiatives has yet been undertaken (Setboonsarng 2006), despite the overwhelming rural nature of poverty[1] and a growing interest in organic techniques amongst farmers, development institutions and government.

The aim of this working paper is to explore the impact of organic agriculture development initiatives on the lives of small-scale farmers in Cambodia. The paper opens with a discussion of organic agriculture, including a literature review of the impacts of organic initiatives on farmer wellbeing. The research methodology is then introduced, with a focus on how a subjective concept of 'wellbeing' defined by farmer participants was used in this study. The results section presents the main findings on the impacts of the organic initiatives, and the conclusion relates these findings to wider literature.

Background: Organic agriculture and development

Defining organic agriculture

Common definitions of organic agriculture frequently focus on what organics lacks; the prohibition of most synthetic inputs (such as pesticides and chemical fertilisers) is a central aspect of the practice of organics. However, organic agriculture is not simply a 'return to the past' (Lampkin 2002). Organics combines traditional farming knowledge with modern scientific understandings of crop rotation, composting, green

[1] Ninety-one percent of those who are considered poor in Cambodia are said to reside in rural areas (World Bank 2006:45).

manure, multiple cropping and other techniques to create a system that relies on minimal outside inputs to keep up soil fertility, and is therefore different from many notions of traditional agriculture.

Organic certification schemes have been developed to increase quality control and have allowed organic farmers to differentiate themselves and gain premium prices, but organic farming is not defined just by certification; the organics community is becoming increasingly open to peer-certified, non-certified and alternative certification schemes. The farmers involved in this study had various types of organic certification, including third-party certified, peer certified and non-certified farming systems. Farmers were considered for this study if they fulfilled three criteria: 1) they did not use chemical inputs; 2) they used organic techniques to improve soil fertility, such as composting animal manure and household wastes, producing green manure and rotating crops; 3) they were members of an organic farming initiative.

Organic agriculture and development

A growing number of reports argue that organic agriculture can be a vehicle for poverty reduction, and empirical research confirms a definite link between organic agriculture, food security and poverty reduction in developing country contexts (IFAD 2003; Araya and Edwards 2005; Egziabher 2005). The Food and Agriculture Organisation (FAO) conducted a wide report of organic agriculture's potential to contribute to food security in 2002, concluding that organics is a beneficial strategy not only for export, but for subsistence farmers attempting to meet family food requirements and perhaps sell surplus in local markets. Research from various developing countries points to lower production costs in organic systems because less external inputs are used (Rosegrant and Ringler 2005) and price premiums of up to 300% may be gained on the international market (Setboonsarng 2006:8). Other studies have found that even without price premiums, farmers are adopting organic agriculture to save costs and achieve sustainable yields (Scialabba and Hattam 2002). Studies also show health improvements for farmers under organic systems. Farmers in India said that symptoms associated with pesticide poisoning disappeared after conversion to organics (IFAD 2005), and a Latin American study showed that farmers perceived themselves to be healthier after conversion to organics (IFAD 2003). On a macro scale, a comparative paper published in 2007 compiled data on crop yield from 293 studies, and found that organic methods could produce enough food on a global per capita basis to sustain the current human population, and potentially an even larger population, without increasing the agricultural land base (Badgley et al. 2007).

Research is still biased towards certified market-led organic approaches, and the literature on the work of numerous organisations promoting organics for subsistence and local production-consumption networks is poorly developed (Parrott and Wright 2007).

Organic agriculture in the Cambodian context

Years of civil war and the gruesome Khmer Rouge regime left a profound negative legacy on agricultural development in Cambodia through the massive loss of life and social disruption, dumping of pesticides and landmines, extreme poverty, and poorly maintained infrastructure.

Chemical fertiliser and pesticide use amongst Cambodian rice farmers is extremely high compared with other developing countries (EJF 2002), and highly toxic

pesticides that are banned or restricted in Western countries (such as DDT and Dioxin, a component of Agent Orange), are used widely, usually with no instructions for proper usage in the Khmer language; the alarming negative human health and environmental consequences of these are well documented.[2] Despite the high use of chemicals, rice yield is relatively low with an average of only 1.9tons/ha (compared to an average of 4.1tons/ha over Asia) (IRRI 2007), and farmers are often unable to produce enough rice for their family. Market access is complicated by poor infrastructure and low education levels, and most farmers sell their rice directly to traders while still paddy in the field (67% of sales); the rest is sold to local mills and other buyers, who are often part of powerful families controlling large areas of trade (JICA 2001:3).

Growing awareness of the negative impacts of conventional farming systems on both the environment and farmers has led to a push for more sustainable agricultural systems in Cambodia. Since the late 1990s, organic agriculture has spread throughout Cambodia and several organisations now promote organics, including community based organisations (CBOs), non-governmental organisations (NGOs), bilateral donor agencies, private companies and government departments. The German federal development agency (GTZ) is the major player developing the export market, with projects involving 700 farmers in two provinces (Kampong Thom and Kampot). Cambodian NGO 'CEDAC' is the biggest non-governmental agricultural organisation in Cambodia, supporting over 21,000 farmers (not all organic) in 13 provinces. Currently, the Cambodian organics movement is fairly fragmented, but there are signs of convergence; thirty-one organisations recently formed the Network of Eco-Agriculture Development in Cambodia (NEDC), and a national certification agency (COrAA) has been set up to develop domestic chemical-free and organic production standards.

Although Cambodian reports into the impacts of organic initiatives are limited, the German development agency GTZ have undertaken a survey of their certified organic rice initiatives in Cambodia (Schmerler 2006) and Cambodian NGO CEDAC has collated a number of reports from their organic rice and vegetable initiatives. These reports confirm that organics initiatives have contributed to poverty reduction, especially amongst people around the poverty line. However, independent studies of multiple initiatives in the country have not been widely undertaken.

Methodology

This paper is based on fieldwork that took place over six weeks in April-May 2007. Semi-structured interviews were held with 57 farmers (including 26 males and 31 females) in seven Cambodian communities. All research participants were members of organic agriculture initiatives supported by CBOs, NGOs and/or local government, and were considered to be organic farmers as they fulfilled the two criteria described above. The interviews were conducted in Khmer, either by myself or with the aid of my research assistant (a university student in Agricultural Economics and intern at the Phnom Penh office of one of the agricultural NGOs). Local staff of the organic agriculture initiatives helped with contacting potential research participants but were not present during interviews.

[2] A report by the Environmental Justice Foundation (2002) found that 88% of 210 pesticide-using farmers interviewed in Cambodia had recently experienced symptoms of chemical poisoning (dizziness, headaches, night sweats, shortness of breath, unconsciousness), 35% of these reported vomiting after spraying and 5% had experienced unconsciousness, indicative of serious poisoning.

Case studies

Seven communities were chosen for this study in order to cover three main criteria: a wide geographical area with diverse farming conditions and infrastructure; a variety of development organisations supporting the initiatives; and a variety of quality control approaches (including export and domestic certified and non-certified systems) and trading approaches (including export, urban, local trade and subsistence). Where possible, all members of a village organic group were interviewed, and I attempted to include an equal number of female and male farmers. Farmers from a range of wealth levels were included, with a focus on farmers that considered themselves to be 'very poor' or 'poor'.

The activities of the organics initiatives varied, but all focused on the spread of organic techniques, and were structured into local village groupings, which facilitated farmer meetings, technique workshops and support for farmer innovation. Some of the initiatives assisted farmers to form groups for selling, or linked farmers with markets such as hotels, urban shops and European traders. Some included training in financial management, gender relations and/or marketing for their members.

Wellbeing measurement

Many empirical studies of inequality and poverty use individual or household income, or consumption to approximate wellbeing. However, it is well known that these measures are deficient (Deutsch et al. 2003), as poverty has many dimensions beyond income and is a subjective concept. Studies that use participatory wellbeing indicators to ask people about their visions of development and wellbeing are becoming more common. For example, reports such as the World Bank's *Voices of the Poor* (Narayan 2002) are useful in illustrating the ways that people's ideas of poverty and wellbeing vary according to their culture and life situation. In a recent wellbeing study spanning four developing countries, researchers asked participants a range of questions about their values and aspirations and found that subjective quality of life was not simply equated with happiness, but related to the aspects of life people regarded as important (WED 2006). For this study, I drew from the WED approach and also from a study by Veluw (2006) that questioned Ghanian farmers about their values by asking them 'What sustains you?' In my study, the participants were initially asked to reflect on their values by answering a similar question, translated as 'What is most important to you?' I then asked about the fulfilment of the identified areas of importance in order to gain a more accurate picture of the person's subjective wellbeing.

Responses to the question: 'What is most important to you?' are graphically depicted in Figure 1. Responses were grouped into main themes, and where people gave more than one response, these are counted as separate values. An overwhelming majority of people said that being able to grow sufficient rice for their family was the most important thing for them. The land and rice itself were symbolic of far more than a food source; despite talking about the hard life of a farmer, a number of farmers said they did not want to go to the city and wage labour would only be spent on buying rice for the family:

> If we did not [farm] we'd have to work as labourers and we would spend the income on food anyway.

Enjoying good health and having enough money were important secondary themes. Of the four people who mentioned 'having enough money' in their responses, this was mentioned after rice in all cases; for example:

> Having enough food, and enough money to live is important. But most important is having a rice field to grow rice.

Responses to this question were often framed in the language of 'enough', such as 'having enough food' or 'enough money'. When asked what 'enough' might be, answers most often focused on overcoming vulnerability, for example:

> Enough is when I know we will have food for the family to eat for tomorrow.

> Enough money would be having some left over so I can take my daughter to the hospital if she gets sick again.

There was no discernible relation to gender or location, with both men and women in all case study sites answering predominantly that rice cultivation and health were most important to them.

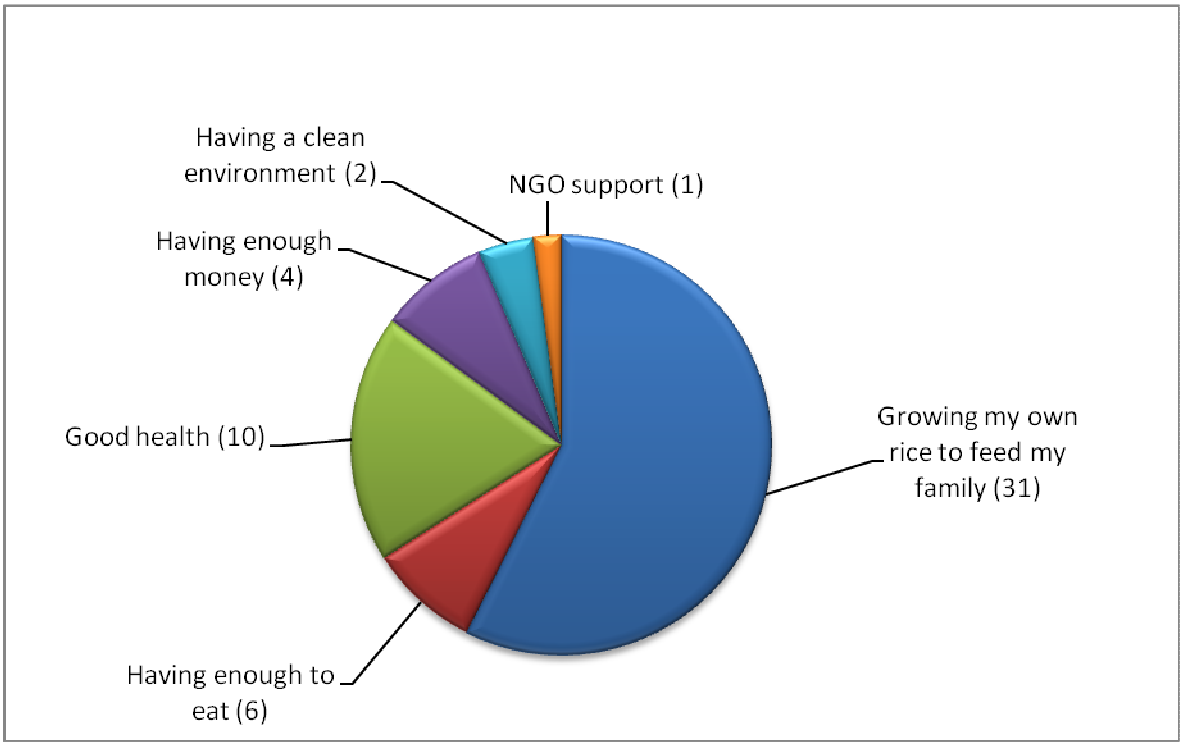

Figure 1: Most important values identified by farmers

Impacts of the Organic farming initiatives

All farmers interviewed stated that their lives were better now than before they joined the organic farming initiatives. The three most important areas identified by farmers, ability to grow sufficient food, health, and income, are discussed below.

Ability to grow enough food for the family

All farmers in this study said they were more food secure since joining the organics initiatives; that is, they were able to provide their family with more food – and more

nutritious food – than before. Twenty-three (of fifty seven) farmers interviewed said they did not have enough rice previously and could now fully support their families with enough rice for the entire year. Others had improved a smaller amount; a minority had always been able to support their family. Several families that were receiving premium prices for their organic produce mentioned that they now had greater food security because they could afford to sell less and have more for the family to eat themselves. Farmers reported greater nutritional diversity due to the ability to grow more vegetables for eating and from selling premium-priced and/or larger amounts of farm produce, which allowed families to buy more protein-rich food such as fish.

Many farmers felt that using some of their own rice for family subsistence and local markets was a less risky strategy than selling all of their rice and other crops for premium prices and using the income to buy food. Even farmers in export certified initiatives generally saved approximately half their rice yield for eating, selling the surplus to more lucrative markets. In two villages, more than half of the people I spoke with mentioned their desire to sell to the local area, and one farmer told me that even though they 'will only get small price benefits, the community will benefit'.

This focus on family and community is particularly interesting in the context of critical literature which questions the food security impacts of trade-based organics initiatives (Mertz et al. 2005). In this study, food security increased for farmers in all initiatives, regardless of whether they were trade-based or subsistence-based.

The increase in food security experienced by the farmers may be due to a number of factors. Increased yields and increased income were most often mentioned as direct factors, and indirectly, the emphasis many farmers put on sharing their knowledge and learning from others, developing new innovative techniques and creating links with other farmers, local government and NGOs in order to access land and markets probably all contributed. The knowledge gained in organic techniques through training workshops and sharing with other farmers was thought to be particularly valuable by many people. Often, people said that they would pass these techniques onto their children:

> We have to do the best thing for our children. We are just farmers…but we can teach them techniques for growing so they are independent.

In the context of uncertain land tenure that still characterises rural Cambodia, knowledge was seen to be particularly important because it could not be taken away. One woman felt that even though she did not have land herself, the gains in knowledge she had experienced through the training workshops held as part of the organic initiative had developed her confidence enough to ask other farmers' permission to use their land:

> The important thing is the training courses because before I never thought of growing on the land but now I can ask permission of the land owner next door to plant potatoes on his land even if I cannot afford to get the land myself. People can take things like land away, but they cannot take training away.

In terms of productivity, forty five farmers observed that the productivity of their farms had increased, while only three said that yields had decreased. A number of

factors, such as favourable weather conditions, may contribute to increases in yield,[3] but it is still remarkable to note how many farmers felt that the productivity of the farming systems improved after learning organic techniques. Yield increases were experienced not only by farmers converting from traditional systems (where no soil improvement techniques were previously used, and therefore yield increases may be expected) but also those converting from conventional systems (where chemical inputs were previously used). The most common reasons given for higher yields included (from most often mentioned): the use of compost, higher soil fertility, more care taken in weeding, the use of new planting methods including System of Rice Intensification (SRI), extending to two growing seasons, raising the banks around the rice field to retain organic fertiliser, ploughing in crop remains, digging ponds, access to better seed, investing in other resources such as cows, and other life changes (for example, the children have grown so there is more labour and the family are able to grow more).

Farmers that experienced decreased yields were all in their first or second year of organic farming, and felt that they lacked experience, techniques, water and natural fertiliser, and the time needed to care for the soil properly.

Other productivity benefits contributing to increased food security were also noted by many people. For example, the soil colour and level of micro-organism activity was noted to be much better under an organic system. Farmers also reported an increase in biodiversity in their rice and vegetable fields, including the ability to raise fish in the rice fields.

Impacts on health

All but one research participant felt that his or her health had improved since joining the organic group (the exception was one seventy-eight year old farmer, who said his health was declining due to his old age). Many farmers said they experienced fewer incidences of dizziness, stomach problems, diarrhoea, vomiting and headaches. Many people believed this was due to relief from chemical poisoning (see Box 1 below), while others felt the health improvements were due to a more nutritious, protein-rich diet. Some farmers reported fewer hospital visits, which they said enabled them to save money for spending on food and other necessities. Others, as noted in Box 1, said they were now able to work more effectively because of their improved health, and some of the poorer farmers said they now had the money to visit hospital so sicknesses could be properly cured.

> *Box 1: Improved health as a result of the organic initiative – Mrs S.*
> Mrs S. is an organic rice and vegetable farmer who farms on rented land and a small plot she received from a local NGO. Previously she used twenty bottles of a variety of pesticides on her vegetables and rice; every year she increased the amount because her yields were decreasing. She did not know about the need for protective clothing when spraying. Five years ago Mrs S's husband died suddenly, followed by one of her two sons. Mrs S. also became sick: *'I vomited*

[3] Three points should be kept in mind when discussing yield increases: Where other alternative production methods, such as System of Rice Intensification (SRI), were introduced in conjunction with organic systems, yields may be higher; a number of farmers have increased and diversified their production (for example, growing vegetables where before they grew only rice); and weather was favourable in some areas over 2005-06, and therefore yields may be higher because of environmental factors.

all the time and it got so bad I could not walk'. She was diagnosed with severe chemical poisoning. She stopped using chemicals and learnt about organic techniques from the local NGO. She now farms organically and is also a local trader dealing only in organic vegetables from the village. She says, *'the chemical poisoning I have got into my brain and lungs, and I am still feeling some of the effects now. Before I was sick every day, but now I'm only sick two or three times each year and I can work; I'm happy.'*

Impact on income

All farmers interviewed said they had increased their net income since joining the organics initiatives.[4] Even in cases where expenses had increased, net income had also increased, so the overall economic impact of the organics initiatives was positive. For example, in one upland village, the majority of farmers had converted to organics from a traditional farming system that used no chemicals or composting techniques, and now purchased some manure for composting in their organic system; therefore, expenses were slightly higher. However, all farmers reported that their incomes had increased, due to greater productivity and premium prices received by selling as a group to an urban organic produce outlet.

The most common reason given for increased incomes was lower input costs, followed by increased yields, diversity of crops, premium prices and reduction in medical fees due to better health. For example, incomes increased between 1-3million riel[5] in one area, as most farmers had grown almost no vegetables before the organic initiative and were able to increase vegetable production through their knowledge of techniques such as crop rotation. Even farmers who had experienced a drop in yields told me that their income had increased due to less spending on inputs, as can be seen in Box 2. In some areas, farmers had captured price premiums (generally 10-20%) by organising groups for selling at local markets, and/or connecting with organic supply chains to urban shops and export markets.

Box 2: Reduction in expenses as a result of the organics initiative - Miss K.

Miss K's rice yield has decreased slightly since converting to organic farming one year ago, and prices have not changed; therefore her income was 550,000r this year compared to 700,000r before joining. However, she says: 'when we include chemical expenses, we used to spend 300,000r, and now we use our own compost and buy some dung for a cost of 100,000r. So we are making 50,000r more now and I think our yields will increase'.

[4] Net income is understood here as revenue minus expenses such as fertiliser, seed, and irrigation costs. It is important to note that from a Western point of view, this concept of net income may be misleading as it does not take into account labour costs. However, most farmers felt that labour costs were not an important aspect because they relied primarily on family labour, and said that they generally could not find paid off-farm employment, so any extra farm labour was not felt to be displacing other income opportunities.

[5] The riel is the Cambodian unit of currency. 1USD = 3700 riel.

Conclusions

This research shows that in the Cambodian context organic agriculture can be an effective development strategy that is able to benefit a variety of farmers. The farmers in this study all said their lives are now better than before they joined the initiatives, and benefits were found in areas of life that farmers identified as most important to them.

By attempting to place the aspirations of the participants at the forefront of development measurement, methodologies such as that used in this study to measure wellbeing may reveal values that are said to be underplayed or ignored in 'top-down' policy documents and research methodology (WED 2006).

The results of this study support evidence showing the development potential for organics. Specifically, the food security and health impacts of organic conversion are evident in this study, complementing studies by IFAD (2005) showing a large reduction in pesticide poisoning-related symptoms after conversion to organics, and Parrott and Wright (2007), who found that medical expenditure decreased. Interestingly, some farmers in this study reported an increase in medical expenditure because they could now afford to visit the hospital, showing perhaps that the initiatives managed to reach poorer people. The results also support work on economic empowerment by Rosegrant and Ringler (2005), who found that overall production costs were lower under an organic system. This study extended this finding by showing that even farmers converting from traditional systems, whose expenses did not reduce, still experienced net income gain through increased yield, diversity and premium prices. Furthermore, yields increased in the majority of cases for farmers converting from both traditional and conventional systems. This contradicts findings from FAO (2002) that suggested yields for farmers converting from conventional systems would generally decrease. Price empowerment through the ability to access premium markets or develop group selling initiatives was more variable.

This study was limited by time, and a longitudinal study of three years or more would greatly benefit the sector in Cambodia, as it would allow the full conversion process (which takes approximately three years) to take place and would make it easier to assess the impact of climactic variation, thereby more clearly showing the overall impacts on farmers and farming systems. However, the findings in this and similar studies should, at the very least, encourage more development organisations, donor agencies, governments and farmers to seriously consider organic agriculture as a development strategy.

Note

This study was reviewed by the Massey University Human Ethics Committee and consent was given to conduct fieldwork. During fieldwork, all research was undertaken in line with the Massey University Human Ethics Committee Code of Ethical Conduct for Research, Teaching and Evaluations involving Human Participants (2006).

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