BEHAVIOUR CHANGE AND DIFFUSION OF INNOVATION

EXECUTIVE SUMMARY AND CASE STUDIES

JANUARY 2017

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EXECUTIVE SUMMARY

General Trends and Lessons Learned

A review of 6 behavioural change case studies from varying institutions revealed several common trends. These included the following:

- Using multiple, mutually-reinforcing strategies is more effective than using only one strategy

- Common strategies included:
  - Awareness raising
  - Information dissemination (e.g. tours, workshops, information packages, campaigns, in-person visits, etc)
  - Using leaders and positive examples to influence and encourage behavioural change in the community
  - Developing and using social networks
  - Public events and other assemblies to empower action
  - Simple convincing, and inclusive vision statements
  - Using regulatory measures and a legal framework

- Cost is a major barrier to implementing strategies; funding can be an important factor in implementation

- The most common method used for evaluation was the questionnaire survey, including pre- and post-surveys to compare differences. Surveys measured demographic characteristics, motivations, intentions, attitudes/values, behaviour and barriers

- Other evaluation methods included: interviews, document and census data screening, and follow-up phone calls
Behavioural changes vary according to socio-demographic characteristics; understanding these differences is important for understanding motivations, attitudes/values, and barriers.

When behaviour or actions require more time and/or capital, behaviour change is more challenging to achieve.

Changes in attitudes or values do not necessarily translate into behaviour change: intentions are the best predictor of behavioural change. However, people sometimes over-state their intentions to align with social expectations.

The scale of change is often quite small.

Behaviour change can be impacted by what people think about what others are doing and the importance that people place on fitting in (subjective norms).

**Theories**

Most commonly used strategies within the 6 behavioural change case studies were:

- The theory of planned behaviour
- The diffusion of innovation
- Social norms marketing.

Other theories used within the case studies included:

- Transition theory;
- Transition management theory;
- Practice theory;
- Social learning, and opinion leaders.
What Doesn’t Work

- Based on the research in various fields of environmental promotion, it is clear that information only campaigns do very little to reduce environmentally harmful behaviours.
- While information can change attitudes towards a behaviour or practice, attitude is generally a weak predictor of environmentally-friendly behaviour.
- Evaluation measures do not always capture respondents’ beliefs and intentions because they often leave open the option of answering in a way that corresponds with what people think they should say (social desirability).

What Seems to Work

Effective methods for changing attitudes and behaviours include:

- Signing a commitment or otherwise committing to act in a certain way; however, this can be costly to implement (i.e. having a neighborhood representative visit all houses in a neighborhood, providing a tour of an environmentally friendly home).
- Suggesting that if people do not behave in a certain way there will be larger social consequences (threat to public goods).
- Indicating that if one behaves in a particular way they will benefit (community reciprocity).

These strategies need to be supplemented with adequate background information.

Future Directions

In the future, researchers could look at best practices regarding fostering subjective norms within particular populations in order to be most effective. Additionally, researchers might explore methods that will not be threatened by social desirability and can accurately capture what changes are being made – for instance, pre and post intervention evaluations and behavioral measures over the long term.
CASE STUDY ONE

Energy Transition Processes in Rural Areas


About the Program

- The overall goal of the study was to investigate energy transition processes in rural areas by taking a particular look at the role of energy cooperatives in these processes.

- Study mainly uncovers if and under which conditions energy cooperatives provide favourable structures for initialising a sustainable implementation of renewable energies in rural areas.

- Empirical case study in the Rhon-Grabfeld district in Northern Bavaria, Germany, where several energy cooperatives were recently formed through the support and promotion of Agro Kraft, a small rural consultancy, which aimed to raise added value of the region and to foster rural development.

- The first energy cooperative was formed in 2008 to invest in a biogas combined heat and power station. Soon after, other cooperatives followed and have recently embraced wind power plants. Membership in energy cooperatives has a cost.

- The aim of the project was to increase participation in energy cooperatives to then promote energy transition processes. This included the reduction in energy consumption, and the development and adoption of renewable energy projects and practices.
Strategies for Behaviour Change

• Promoting the participation and involvement in energy cooperatives

• Some factors and characteristics that were essential for the promotion of renewable energies in rural areas include:
  o Legal framework favouring renewable energies over fossil energies, enabling a secure investment environment;
  o Funding to support initial activities that do not yet generate income;
  o Frontrunners deeply rooted in the region and of high reputation among population;
  o Established networks of actors and stakeholders;
  o General attitude and willingness towards change among at least some parts of the population;
  o A simple, convincing and highly inclusive concept;

• Spaces and capacities for open dialogues. The targeted promotion of renewable energies was done through feed-in tariffs and a guaranteed access to the electricity grid. This resulted in the redirection of the control over energy generation from large scale producers towards multiple small producers.

• Raising awareness & offering information

• Public events & assemblies

Evaluation

• Interviews were conducted with frontrunners in Rhön-Grabfeld

• Online survey questionnaires were sent out to the members of the energy cooperatives throughout the district

• Screening of background documents
Program Successes and Challenges

- Changes in awareness and behaviour as a result of participation in an energy cooperative, including:
  - 59% of respondents said yes to experiencing a change in awareness on environmental issues;
  - 34% of respondents changed their energy consumption;
  - 29% of respondents changed their financial investments;
  - 18% of respondents changed their political commitment;
  - 17% of respondents increased their commitment to volunteering;
  - 12% of respondents changed their travel behaviours, and;
  - 5% of respondents changed their diet.

- It is mainly altruistic motives rather than profit-driven motivations that drive people to become a member of an energy cooperative.

- The gender balance of respondents is also in line with the results on frontrunners, and the level of activity in energy cooperatives clearly shows that there is a notable male dominance in the case assessed.

- While the engagement in energy cooperatives had an effect on the environmental behaviour of the members, for every field of behaviour at least two thirds of the respondents did not perceive an effect or were unsure.

- The most relevant behavioural change occurred in energy consumption and financial investments.

- Authors identified a limitation of this study:
  - Although the authors asked people to assess their behaviour in relation to their participation in an energy cooperative, they could not exclude the possibility that behavioural changes might be influenced by other factors or other people. However, the high level of participation in their questionnaire and the impressive enthusiasm towards the energy cooperatives and the subsequent
change in the district among the people interviewed showed that the implementation of energy cooperatives do result in different kinds of positive psychological effects.

Theories
- Transition theory
- Transition management
- Practice theory
- Social learning

Lessons Learned
- Rural networks and a solid basis for trust and respect are a pre-condition for change
- Need cooperation with and support of a wide range of actors from administration, business, civil society and individuals and pooling individual strengths within a community
- The more well-running energy cooperatives established, the more positive examples and best practices could be used as reference to animate people to do the same
- Need to have a positive and elaborate vision that is very convincing to others
- Behavioural change depends on socio-demographic characteristics
CASE STUDY TWO

Green Demonstration Homes (GDHs)


About the Program

- The purpose of the study is to conduct a case study on the REEP House and uncover the overall impacts of its programs; and explore the impact assessment methods for the GDHs and determine if it could be improved.

- REEP Green Solutions is an environmental community group. It has a green demonstration home (GDH)—the REEP House for Sustainable Living which is one of the many projects they undertake. The REEP House is located in downtown Kitchener, Ontario and after undergoing a deep retrofit in 2009, the REEP House opened its doors to the public in 2010.

- The is no cost to visiting the REEP House and on average 1,000 people visit yearly. Project is reliant on external funding from grants and donations.

- REEP House for sustainability living is attempting to change people’s behaviours in terms of convincing people to make changes to their homes and adopt sustainable practices.

Strategies for Behaviour Change

Main strategy is to promote behavioural change through education:

- REEP House is resource efficient – features an array of sustainable retrofitting options

- Open to public for tours, workshops and other events
The **Research Shop**

- Highlights to local homeowners retrofits and technologies that can lead to energy, water and cost savings
- Staff act as facilitators and educators to raise awareness and to empower action

**Evaluation**

- Information was gathered between January 1st 2011 and June 30th 2013
- Surveys were offered after the REEP House visit
  - These processes were not standardized within the organisation; therefore, at times, short paper-based questionnaires were distributed to visitors and, with some, follow-up telephone calls or emails undertaken approximately 3 months later
- The REEP House had different surveys for the different tours and events they hosted
  - Some surveys had multiple iterations with only slight modifications, for instance adding or removing one question, or slightly modifying wording in response to visitor feedback
- Follow-up surveys offered 3 months after visiting the REEP House (37 respondents) included multiple choice questions related to the actions they had subsequently taken in their own homes
  - Visitors were also asked which actions they were still planning on taking
Program Successes and Challenges

Attitude and value change:

- Of the visitors who had not had an energy evaluation done on their current home, 27% of respondents intended to get one in the near future after visiting the REEP House;
- 92% of respondents shared their experience with other people after visiting the REEP House;
- Over half planned to come back to the REEP House for more information in the future

Behaviour change:

- Most frequent action people took or feature they added to their home was ‘Rain barrel or cistern’, and the least frequent was ‘Addition’ or ‘Grey water system’
- The most common planned action was ‘Basement insulation’ and the least commonly planned actions were ‘Addition’, ‘Water heater’ or ‘Grey water system’
- Visitors most often performed actions that require smaller time and/or capital investments, but after 3 months the actions they were still planning on doing were those that involved much more time and/or capital
- Over one half of visitors had taken some sort of action after their visit and almost one half were still planned on taking action when surveyed; many had done both
- Authors identified that not having pre-surveys was a limitation to evaluating the results linked to behavioural change. This specific GDH could improve the ways in which they assess their impacts.
- The inconsistent nature of the data collected indicates that individual question results are drawn from a small number of respondents, thus restricting the ability to describe a larger population.
Authors also stated that it was unclear whether these types of projects are having all the impacts they desire. Most GDHs are not evaluating all the possible elements they could be.

Theories

None specified; theory of planned behaviour and diffusion of innovation may underlie successes

Lessons Learned

An attitude or value change does not necessarily translate into a change in behaviour

Pre and post visit evaluations should be used to compare differences. This would help illuminate the factors that may be preventing behaviour changes.

The Framework developed by Stoecklein and Mckernon which uses 5 categories within which ‘success’ should be achieved could be a useful framework in categorizing data. The 5 categories include:

1. Technological performance - Focusing on monitoring and assessing the performance of the new technology being used in the building (e.g. interactions between different technologies – do they support each other or are there redundancies?).

2. Building and educational programme performance - Are the educational programmes at the house well organised and functioning properly? Focus on assessing whether there is alignment between what the organisers want visitors to learn at the house (learning outcomes) and what the visitors are in reality learning and taking away (e.g. are the right teaching techniques being used? Is the information accessible to the different types of visitors? What could be done to improve the visitors’ experiences?).

3. Number of visitors & other demographic information- How many people have interacted with the house and what other information is known about the visitors (e.g. gender, age, reason for visiting and current type of home). The goal is to determine if the home is attracting the intended target audience and whether the existing marketing strategies are effective in getting people to visit.
4. Attitude, liking and value changes – After visiting the house, did visitors change their attitude towards the topics presented in the house or their understanding of the value of sustainable housing? The goal is to determine changes in visitors’ attitudes and values because of their visit to the GDH.

5. Implementation & behaviour change – Are visitors acting in new ways because of their visit to the home? Success in this category is the implicit goal of most GDH projects. Collecting this data is most effective when there is pre- & post-visit information that can be compared for differences. It can also help to identify the factors that may be preventing behavioural changes.
CASE STUDY THREE

Urban Household Water Conservation


About the Program

- Analysis of response to a residential urban water conservation program in San Antonio, Texas

- The Acquifer Management Plan lasted 2 years and consisted of restrictive water conservation measures. This 4 stage plan aimed to reduce residential water consumption
  - The first voluntary stage began in July 1995
  - After mandatory measures (stage 2 and 3) were cancelled in March 1997, a return to the first voluntary stage was declared shortly before the program ended in April 1997
  - Stage 4 was never implemented

- The aim of this program was to reduce household and residential water consumption

Strategies for Behaviour Change

- The Acquifer Management Plan consisted of 4 stages of increasingly restrictive water-reduction measures, including voluntary compliance and three intended stages of mandatory conservation
Evaluation

- Pre-surveys to evaluate people’s opinions and feelings concerning the importance of the issue and making changes, as well as how to encourage this change in behaviour.

- Use of municipal water consumption data at the census tract level to evaluate changes in household water consumption levels (before and after the program).

Program Successes and Challenges

- Results show major disparities between survey responses and manifested actions.

- Results demonstrate no decrease in residential water consumption as compared to previous years; overall, the plan failed to achieve considerable water conservation.

- There were differences in responses to voluntary and mandatory stages according to different socio-demographic groups.

- Although the first voluntary stage was relatively successful overall at reducing water consumption, people of relative wealth, higher education, republican and anglo-dominance were the least responsible for that reduction.

- The second mandatory stage had a different pattern: there were no demographic characteristics of particular importance that were linked to affecting water consumption change.

- Absolute volume of water conserved is difficult to reach; however, mandatory measures did promote change by standardizing conservation response between classes of consumers. As a result, mandatory measures democratize conservation responses.

- Authors identified a lack of spatial representation of conservation during the plan as a limitation of the study.
Lessons Learned

- Understanding the demographics of popular support for water conservation is critical in strategies promoting participation.
- Often with conservation surveys, respondents tend to respond in socially desirable ways and may overstate their conservation intents. These discrepancies get in the way of effectively designing and implementing water conservation policies.
- A benefit of using a survey format is the ability to inquire with specificity about the perspectives of the respondents.
- The study shows that when measuring population attitudes towards conservation, the gap between survey respondents' stated attitudes and manifested actions can be considerable.

Theories

- No clear theory explicitly identified; may have been attempting diffusion of innovation.
CASE STUDY FOUR

Fostering Sustainable Behaviour Through Community-Based Social Marketing


About the Program

- Water conservation is identified as a repetitive, environmentally friendly behaviour
- Growing population can place demands on region’s water supplies, and in the summer months can see up to a 50% increase in water usage due to lawn watering
- Project conducted over the course of a summer of 1997 in Durham Region, outside of Toronto
- Project goal: to reduce peak summer water usage by 10%

Strategies for Behaviour Change

- Some households were provided with information packets on water conservation
- Others were visited by students who spoke with them about the importance of water conservation; this group was provided a watering gauge, reminded about lawn watering policies and signed a commitment to engage in water conservation activities
Evaluation
- Program was evaluated based on behavioural observations
- Observations were compared to a baseline measure

Program Successes and Challenges
- Program exceeded its intended goal of 10% reduction in peak summer water usage:
  - Households visited by students decreased their watering by 54%
  - Excessive watering decreased by 66%

- Challenges:
  - The information-only condition actually increased its watering on various measures (15%-96%), providing evidence that information intensive/solely information-based interventions can be counter-productive
  - Costly to implement: students were hired to visit all houses in an area to speak with residents, which may not be the most efficient or effective way to engage residents

Theories
- Social norms marketing

Lessons Learned
- Solely information-based interventions are not effective and can increase unwanted behaviour
- Simple actions like a water gauge and commitment sheet can improve environmentally friendly behaviour
CASE STUDY FIVE

Motivating Residents to Combat Invasive Species on Private Lands: Social Norms and Community Reciprocity


About the Program
- Researchers used semi-structured interviews and survey methods
- 243 Hawaii residents were recruited over the course of two weeks
- Aimed to better understand what predicted conservation behaviour regarding invasive species

Strategies for Behaviour Change
- Used the threat to public goods (biodiversity) to motivate behaviour change
- Community Reciprocity: believing that your community cared and would also engage in conservation activities
- Use of workshops to enhance norms and reduce barriers to action

Evaluation
- Selected an area where public knowledge of invasive species was already high, which allowed for the opportunity to investigate additional factors that predict activism
- Asked behaviour based questions but did not measure outcomes of targeted behaviours
Program Successes and Challenges
- Identified factors that were associated with activism:
  - Subjective norms (believing whether others care about issue)
  - Knowledge on how to control invasive species
  - Collective risk (risk to biodiversity rather than risk to private property)
  - Community reciprocity (feeling that everyone was working together)
- Authors acknowledge it was not an intervention and cannot prove causality – it is not clear whether activism was due to norms or norms increased due to community activism

Theory Used
- Social norms marketing

Lessons Learned
- Demonstrated the importance of community reciprocity in facilitating behaviour change
- Threat to public goods (such as biodiversity) can be a more effective way of motivating behaviour change than threat to private goods such as land, property value, etc.
CASE STUDY SIX

Bait Shop Owners as Opinion Leaders: A test of the theory of planned behaviour to predict pro-environmental outreach behaviours and intentions


About the Program
- Surveys were sent to bait shop owners and their employees in order to better understand what motivators would lead to outreach behaviours to their customers to minimize the spread of aquatic invasive species
- Data collected in Wisconsin across 67 bait shops

Strategies for Behaviour Change
- Pressure from social networks to engage in outreach behaviour
- Empowering bait shop owners to know more about the issue and how to stop to trigger engagement in outreach behaviours

Evaluation
- Evaluated opinion leaders’ intentions to engage in outreach behaviour through a survey in order to gather data to be used to influence their social networks
- Not able to evaluate the impact of said outreach on customers’ behaviours

Program Successes and Challenges
- Bait shop owners who had higher intention of engaging in outreach behaviour were more likely to do so
• Identified ways of making subjective norms obvious that were easy for bait shop owners to do

• Subjective norms are the strongest predictor of behaviour in this study making it more likely customers will engage in environmentally friendly practices if they perceive them to be the norm

• Challenges:
  o Study assumes that customers will look to shop owners as opinion leaders and take meaningful action based on their interaction

Theories
• Theory of planned behaviour, social norms marketing, opinion leaders

Lessons Learned
• Attitudes towards the issue were the weakest predictor of outreach behaviours, intentions the best predictor

• Provided evidence for the use of opinion leaders as a way to motivate behaviour changes