

Promoting Pro-environmental Behavior: Overcoming Barriers

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ABSTRACT

Since many of today's environmental problems are rooted in human actions then the solutions to these challenges lie in changes in human behavior. The barriers which impede peoples' environmental choices can be divided into two categories, external or structural, e.g. institutional, economic, social and cultural, and internal or individual, e.g. motivation, pro-environmental knowledge, awareness, values, attitudes, emotion, locus of control, responsibilities and priorities. This paper: 1) considers seven individual barriers to pro-environmental behavior, i.e. ignorance or lack of knowledge, confidence in the power of technology to solve problems, reluctance to change lifestyles, fatalism, helplessness, inertia and fear, 2) discusses ways these individual barriers may be overcome and 3) raises questions which would need to be answered if mankind is to move to the creation of more sustainable societies.

KEY WORDS (in alphabetical order): *Barriers; Communication; Environmental problems; General public; Individual responsibility*

Introduction

Nowadays the environment faces many and serious environmental problems among which water pollution, air pollution, deforestation, water shortages, nuclear wastes and radiation issues, loss of biodiversity, global warming. Since many of these problems are rooted in human actions then the solutions to these challenges lie in changes in human behavior (Gifford 2011).

Pro-environmental behavior is defined as "behavior that consciously seeks to minimize the negative impact of one's actions on the natural and built world" (Kolmuss and Agyeman 2002) or as "behavior that harms the environment as little as possible, or even benefits the environment" (Steg and Vlek 2009).

The barriers which impede environmental choices can be divided into two categories, *external or structural*, e.g. institutional, economic, social and cultural, and *internal or individual*, e.g. motivation, pro-environmental knowledge, awareness, values, attitudes, emotion, locus of control, responsibilities and priorities (Kollmus and Agyeman 2002). Some examples of external or structural barriers may be low income, living in a rural area or in a region with cold winters: "Low income severely limits one's ability to purchase solar panels, living in a rural area usually means public transport does not exist as an alternative to driving, and living in a region with cold winters restricts one's ability to reduce home-heating-based energy use" (Gifford 2011).

However, if people are not restricted by structural barriers - thus engagement in environmentally responsible behaviors is possible - but this behavior is not occurring, what could be the reason? The reason is internal or individual barriers. Individuals are important. For example, with regard to combating climate change individual behavior contributes 30 to 40 percent to greenhouse gas emissions (Lawrence 2008).

General population surveys consistently inform us that the public ranks the environment (and global warming in particular) as a very low priority in comparison with other issues. The Pew Research Center survey regarding public priorities for 2010 found that in the U.S. global warming was included in the 20 top issues. Only 28 percent considered global warming a top issue, following the issues of immigration and lobbyists. With regard to Europe only 4 percent of Europeans in the 27 nations of the European Union selected the environment as one of the two most important issues of the continent. As in the US, the economy is the top issue. Even immigration is more important than the environment in the Eurobarometer 72 poll (Hayward 2010).

This paper: 1) considers seven individual barriers to pro-environmental behavior, i.e. ignorance or lack of knowledge, confidence in the power of technology to solve problems, reluctance to change lifestyles, fatalism, inertia, helplessness and fear, 2) discusses ways these individual barriers may be overcome and 3) and raises questions which would need to be answered if mankind is to move to the creation of more sustainable societies. Particular attention is paid to the problem of climate change, the most serious of the environmental problems

facing humanity today. For reasons mentioned earlier the paper is organized with the needs of the general public in mind.

Barriers

The following seven barriers to environmentally responsible behavior are among the most important:

Ignorance or lack of knowledge may be defined as not being aware of the existence of a problem and not knowing how to act once one knows of the existence of a problem.

Confidence in the power of technology refers to the hope many people have that serious problems can or will be solved by technology.

Reluctance to change lifestyles refers to people being hostile to lowering their standard of living, inconvenience, and cost (monetary or time).

Fatalism refers to feeling that “It’s too late to do anything”, “We can’t do anything”, or “It’s a waste of time”.

The feeling of *helplessness* is fostered by the scale of the problem, i.e. the large regional or global nature of many environmental problems.

Inertia is rooted on habit, acting just as in the past.

Fear means feeling fearful in facing environmental problems. One consequence of fear is that it may cause people to deny the threat (Oskamp 2000; 2002; Lorenzoni, Nicholson-Cole and Whitmarsh 2007; Steg and Vlek 2009; Gifford 2011)

Overcoming barriers

Save energy. Saving energy is important but such requests need to be presented in a form more likely to lead to effective action. For example, when referring to the average American citizen,

Layzer and Moomaw suggest, in their Afterword in Emanuel's book (2007), that if a person who is driving 1000 a year is to achieve a 3% reduction of emissions per year, he or she could drive 30 miles less, or ride with someone else or use mass transportation or drive less aggressively. Even better, if a person buys a hybrid car he will immediately reduce his emissions by 50% - the equivalent of a 3% annual saving for 23 years. In addition, regarding buildings, they argue that it would be relatively easy for Americans to reduce their emissions simply by adding insulation and energy saving lighting. Furthermore, for better results, old domestic appliances could be replaced with new ones and old heating systems be replaced with modern ones.

The above information could have been presented in a more convincing form. For example, Gardner and Stern (2009) constructed a table in which they divide 27 different actions individuals and / or households can take in order to save energy into two general categories. Actions in the first category involve curtailing the use of existing energy equipment, or in other words, using equipment less frequently or intensively, while actions in the other category involve adopting more energy-efficient equipment or installing or maintaining efficiency boosting modifications to existing energy equipment. Each action is accompanied by the percentage amount of energy saved.

Gardner and Stern (2009) then constructed another table, based on the previous one, which provides a short, prioritized, accurate, accessible, and actionable list of the most effective actions individuals and / or households can take to limit climate change. This table lists 17 actions. The first nine can be taken with little or no initial

monetary cost; six involve curtailment; and three efficiency increases. All of the next eight involve efficiency increases. Again, each action is accompanied by the amount of energy saved (percent). Commenting on the value of their table Gardner and Stern (2009) point out that,

Readers can consider the first item in each category to be the most possible energy-saving action and give it top priority if it has not already been taken and is possible to take. By going item-by-item down the table, householders are guided to where the greatest potential savings lie for them specifically.

Individuals or households who can adopt all 17 of the listed actions can potentially cut their consumption and emissions by half which will be an important achievement if one takes into account the importance of individuals or households regarding carbon emissions in the U.S.: "U.S. households account for about 38 percent of national carbon emissions through their direct actions, a level of emissions greater than that of any entire country except China and larger than the entire U.S. industrial sector". Further, if similar percentages regarding carbon emissions apply to other countries, e.g. U.K. (Lawrence 2008; UKERC 2009), then lists such the one discussed above may be useful to them, too.

Such an effort helps to overcome the barriers of inertia, helplessness and reluctance to change lifestyles.

Encourage people to recycle and buy recycled products. A recycled product is a product made wholly or partly from material recovered from the waste stream, e.g. a remanufactured laser

toner cartridge, recycled paper, and recycled plastic lumber. The benefits of recycling include saving natural resources, saving energy, saving clean air and water, saving landfill and saving money and creating jobs (Buying Recycled 2014).

One way of encouraging people to recycle is to reward them for doing it. In the UK Eric Pickles, the communities' secretary, piloted a reward scheme in Windsor and Maidenhead, in which 70% of the families which were offered the chance to take part, did so. It is noted that "...the good people of Windsor and Maidenhead voluntarily and possibly happily increased their recycling by 35% in six months" (Garvey 2010).

Another way to encourage recycling is to set an example. If neighbors see that you are recycling and buying recyclable products, they are likely to do the same. Or organize a recycling event on the importance of recycling. Such an initiative may encourage more people to begin separating their recyclables from regular trash. The event may include recycling games, food and informational packets on the positive effects of recycling (How to Encourage Recycling 2014)

Such an effort also helps to overcome the barriers of inertia, helplessness and reluctance to change lifestyles.

Use short but credible sources of information. Oskamp (2002), in an important article on teaching and promoting pro-environmental behavior, has highlighted the importance of short articles on guiding people what to do with regard to saving the environment. He referred to a *Time* article (published in 2001) titled "What You Can Do", listing 20 simple steps households can take to combat climate change as well as similar lists

published by other bodies such as the Union of Concerned Scientists.

Since then, due to the growth of the internet, many updated and useful lists have been published. Many organizations governmental or non-governmental, national or international do provide such lists or information in concise form in their websites. For example, with regard to combating climate change the reader should visit the websites of organizations such the U.S. Environmental Protection Agency (EPA) or the Intergovernmental Panel on Climate Change (IPCC).

For those who want to read more there are also excellent short pocket-size books such as *Preparing for Climate Change* by Michael Mastrandrea and Stephen Schneider (2010) or *What We Know about Climate Change* by Kerry Emanuel (2012). Both of these books are written in language easy for everyone to understand.

The above practical suggestions contribute to removing the motivational obstacle of helplessness and combat the tendency to deny dangers that is connected with fear appeals. They also combat the barriers of ignorance and distrust in information sources.

Scale from personal to planet. Starting with global catastrophe will lead to fatalism, since many people cannot vision how they, as individuals, could deal with such a big issue. It is important to start with what people can see around them and care about the most. Start form a local problem and move to other parts of the country or the planet (Communicating on Climate: 13 Steps and Guiding Principles 2013).

Use metaphors. Another way to increase the effectiveness of climate change communication

is to use metaphors. For example, when people ask how it is possible to predict climate 50 years from now when we cannot even predict the weather 15 days from today, they are actually confusing weather and climate:

You might compare this with what happens when you turn on the burner under a pot of water; while you cannot predict the time or place of any particular bubble, you can say with certainty that the water will be boiling in about 10 minutes. Similarly, while we cannot predict the age of death of any particular person, we can say with confidence that the average age of death for people in the United States is 77[.] How can scientists respond when people say that climate has always changed, so the current warming is probably also natural? A good metaphor that reveals the fallacy of this thinking is that just because lightning strikes have long caused forest fires does not mean fires cannot also be caused by a careless camper (Improving How Scientists Communicate about Climate Change 2008)

Clearly metaphors can bring dry science to life and can combat the barrier of ignorance.

Technology may not solve our problems. New technologies have appeared for environmental protection, technologies which were unimaginable just a few years ago. Entire ecosystems, e.g. the Amazon rainforest, can now be monitored in nearly real time; satellite communications can follow creatures such as the jaguar and the puma; smartphones can be used to report illegal logging. Such technological

achievements serve two purposes: reveal the state of the world in details not seen before and provide more information to more people in different parts of the world.

The vast tropical forests of the Amazon and the Congo function as the planet's lungs, inhaling carbon dioxide and exhaling oxygen and thus slowing climate change. The destruction of tropical forests accounts for around ten percent of the carbon emissions causing global warming.

The forest-surveillance technology called "light detection and ranging" (LIDAR) "beams powerful lasers through tree canopies to the forest floor, which bounce back carrying highly detailed data about the structure of the forest" (Hoekstra 2014). There is also technology which

can recognize a range of seemingly invisible characteristics, including a tree's photosynthetic pigments, its basic structural compounds, and even the water content of its leaves. Researchers can use this data not only to estimate carbon storage capacities but also to analyze forest diversity and assess tree health. With a single airplane, these paired technologies can scan over 120,000 acres, or as many as 50 million trees, in a single day. And the equipment is so sophisticated that it can distinguish among 200 different tree species (Hoekstra 2014).

However, what should be noted regarding tropical rainforests are the complex political and economic realities of the often impoverished tropical nations in which these forests lie: "There are immense difficulties involved in terms of nationalism and heritage, strategic military implications, ownership and control over data, deploying low-flying aircraft over conflict zones,

the fact that powerful interests will not want a fair an honest accounting of carbon stocks, and so on. A grande idea, but practically impossible to implement and therefore doomed” (Six Thoughts on “Worldwide LiDAR of Rainforest Biomass for REDD+” 2014).

In the mid-1990s, P. Dee Boersma, a world authority on penguin conservation, discovered that Argentina’s oil pollution was responsible for the death of as many as 40,000 penguins a year. She used GPS tracking devices, at a time when the technology was new and expensive, to document where the birds were foraging. She then cooperated with Argentinian authorities to move the shipping lanes further away from the coast, significantly reducing a mortality rate that could have caused the penguins’ extinction (Hoekstra 2014).

The increases in agricultural productivity have improved the lives of billions of people but have left this natural capital dangerously depleted. The dramatic increases regarding consumption of natural resources do not point to a sustainable future. In the last 40 years people have been consuming more resources than the world’s natural capital can replenish and causing more pollution than it can absorb. It is most important to note that “in 2010, the nonprofit organization the Global Footprint Network calculated that humanity now requires roughly 1.5 earths to sustain its current level of consumption each year. Put another way, humanity now uses up a year’s supply of the earth’s natural resources by mid-August. After that, it is drawing down against the future capacity of natural capital” (Hoekstra 2014).

However, technology is not always there when we need it. Although the members of the first human societies damaged their environment

very little, nevertheless, humans always used some form of technology. The civilization of Maya may have collapsed because of the failure of its agricultural system to support a constantly increasing population. Some civilizations in Ancient Mesopotamia may have collapsed from excessively saline soils as a result of the irrigation systems they used (Kottis 1994)

In Northern Europe, not so long ago, the habit of the inhabitants of various areas to leave human and other organic waste anywhere-anytime was the cause of epidemics of cholera and typhus. In other occasions the huge number of horses and other animals created conditions of pollution which could be worse than those of modern times (Seneca and Taussig 1979).

Others have noted that technology often does not deliver even its own prospectus. For example,

the Green Revolution, which doubled global food production in the late 20th century, has now stalled. And it may not just be the Green Revolution. Canadian futurologist Vaclav Smil, speaking at the Sausalito event, argued that “all the essential technologies” of modern life are at least a century old. He noted, for example, that the basic process of manufacturing nitrogen fertiliser from the air “hasn’t changed since 1894” (Pearce 2013)

It is wise to think of technological progress with caution. Technology for various reasons may not be available when we need it. And even if it is, it is not certain that the data collected will actually be used effectively.

This approach combats the obstacles of inertia and unrealistic beliefs on the power of technology.

Use cooperative activities. Cooperative activity toward common aims promotes group cohesion and contributes to overcoming the obstacles of inertia, helplessness, fatalism and fear. Gershon and Moser (2012) offer these guidelines:

- Hope is a precondition to effective action.
- Actions without conviction and hope transmit to others pessimism and undermine success.
- Be clear on what we can hope for.
- Create safe spaces for people to talk with peers about their feelings, e.g. fear, anger, guilt, despair.
- Help people to see their role in the change process.
- Build a sense of the collective as it lifts people out of their more insular worlds.
- Forming neighbor-to-neighbor engagement efforts which produce results on a block level.
- Use early adopters as models. Early adopters can be the leverage point because they are already receptive and well-equipped to influence their peers.

Some questions for social scientists

The points discussed above lead to some questions that social scientists should deal with if mankind is to move to the creation of more sustainable societies. These questions can serve as springboard for further discussion:

1. Although there is a proliferation of published scholarly work on climate change communication and its effects on the general public since the late 1990s then why is it that carbon emissions continue to increase at global and national levels and societies continue to be vulnerable to climate variability? How can we strengthen the field of environmental communication?
2. What is sustainable development? Is it possible for a society to continue to grow and to be sustainable?
3. What are the best initiatives a social scientist can take other than writing scholarly papers in helping people adopt environmentally responsible behaviors?

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