The P.E.I. Eco-Home Project

"Islanders Exploring Ways to Live Sustainably"

Final Report

Submitted to:

Environmental Coalition of
Prince Edward Island
126 Richmond Street
Charlottetown, PE
C1A 1H9

Submitted by:

Rod Dempsey, P.Eng.
Coordinator

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1.0 Rationale

The rationale for the P.E.I. Eco-Home Project is evident from the many environmental indicators, statistics, and reports that leave little doubt as to the increasing level of stress to which humanity is subjecting the planet. This stress is manifested through climate change (part of which is anthropogenic in origin), exploitation of renewable and non-renewable resources, and loss of natural habitat. The world's mainstream scientific community is essentially unified in recognizing that many current human practices are unsustainable over the long term and, in fact, must be mitigated or ceased immediately.

Many global and national statistics are indicative of the detrimental impact human behavior is having on the environment. This degree of impact is reflected in the ecological footprint measurements reported by the World Wildlife Fund (WWF) in their Living Planet Report 2004.[1] (The ecological footprint is a measure of the number of hectares of productive land necessary to provide the resources used by, and waste assimilation capacity required by, humanity.) The report states that the size of the average global ecological footprint is 2.2 hectares per capita. However, there is only enough productive land in the world to provide 1.8 hectares per capita – meaning that the carrying capacity of the world is being exceeded. Common footprint sizes in developed countries range from 5 hectares upward of 9 hectares per capita.

In 2003, the research organization GPI Atlantic calculated that, in 1999, the per capita Prince Edward Island ecological footprint was 8.98 hectares.[2] This is more than four times greater than the world average. Furthermore, the range of footprint sizes from which this average was calculated has considerable variation. Consider that, in terms of disposable individual income, the lowermost quintile of the population had a per capita footprint of 7.63 hectares while the uppermost quintile had a per capita footprint of 11.4 hectares – more than six times the size of the globally sustainable per capita footprint.

Island residents contribute to the size of their ecological footprint through many areas of activity. Described below, primarily in terms of their environmental impact, are four such areas that have constituted a major focus of this Project.

Transportation

- A greater proportion of people in P.E.I. drive to work than in any other province (81.9% vs. the national average of 73.8%).[3]
- The amount of gasoline consumed in the Province increased 24% from 1965 to 2000.[4]
- Prince Edward Island consumes more gasoline per capita than anywhere else in Canada.[5]
- The biggest emitter of greenhouse gases in P.E.I. is cars and light trucks.[6]

Food Choices

- "Our average meal travels about 2,500 kilometers to our plates. A 40-tonne transport truck releases about five tonnes of greenhouse gasses for one typical shipment of food – about equal to the greenhouse gasses an average Canadian family produces annually."[7]
- "The most evident use of Canadian on-farm fossil fuel is for powering machinery, heating buildings, and for transporting, irrigating, and drying crops. There is also substantial use of indirect off-farm fossil fuel in the production of agricultural products. For example, energy is required to manufacture chemical inputs, buildings, and farm machinery. Of these, the largest use of energy is the manufacture and transportation of fertilizer, especially fertilizers containing nitrogen."[8]

Material Consumption

- "The 20% of the world's people in the highest-income countries account for 86% of total private consumption expenditures."[9]
- If we are to live sustainably, we must ensure that we use the essential products and processes of nature no more quickly than they can be renewed, and that we discharge wastes no more quickly than they can be absorbed."[10]

Household Practices

- One half of each person's greenhouse gas emissions is related to the home.[11]
- Higher emissions can occur due to the type and condition of equipment needed for space or water heating, lighting, or essential duties (clothes washing, drying, etc.) or due to the practices used in operating this equipment.
- Inside practices can create air pollutants with potentially serious health effects for household occupants. These effects frequently require medical attention which, in turn, impact upon provincial health care costs. An examination of the sources of chemical pollutants (cleaning products, personal care products[12]) can lead to substitutions with healthier and sometimes less expensive alternatives.
- The proliferation of lawn tractors, edge trimmers, leaf blowers, etc. (all ultimately powered by fossil fuels) has greatly increased the ecological footprint of the typical lawn – not to mention the ancillary effects of unwanted noise pollution.
- Lawn fertilizers contribute to global warming as they are a source of nitrous oxide which is a greenhouse gas.[13]

There remains little doubt that many of our present activities are resulting in detrimental consequences for the environment – consequences that will be experienced not only by us, but also by future generations.

While there exists within the public and governmental domain an abundance of credible information relating to environmental awareness and solutions, the mere existence of such information does not necessarily lead to public acceptance and behavior modification. This statement is supported by the following quotations from the book *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing* - "campaigns that rely solely on providing information often have little or no effect upon behavior."[14] Furthermore, "the major influence on our attitudes and behavior … is …our contact with other people."[15]

These two quotations speak to the need for adopting a personal approach in conveying environmental information - an approach that is derived from the strengths and benefits of interpersonal relationships, engages participants in a mutual sharing of information and experiences, and is cumulative in its impact as may only be achieved by multiple interactions. This approach, augmented with various social marketing techniques, is the basis for the delivery of the P.E.I. Eco-Home Project.

2.0 Goals and Objectives

The goals and objectives of the P.E.I. Eco-Home Project were as follows.

Goal 1: To increase the ecological awareness of Project participants.

Objectives:

- Participants will identify their attitudes and behaviors within an ecological context.
- The Coordinator will conduct in-home interviews with all participants to initiate the development of interpersonal relationships and explore personal ecological concerns.
- Participants will interact with resource persons and engage in a variety of project activities to develop their ecological awareness.
- Participants will be assessed for ecological awareness upon entry to, and prior to exit from, the project and will have the opportunity to discuss the assessment results.

Goal 2: To reduce the size of the ecological footprint of Project participants.

Objectives:

- Participants will understand the concept and implications of the ecological footprint and will measure their own personal footprint.
- Participants will decrease the size of their ecological footprint by making behavioral changes in the areas of transportation, food choices, material consumption, and household practices.

Goal 3: To transfer the experience of, and "lessons learned" by, Project participants to the three host communities.

Objectives:

- Participants will involve other household members in practicing new ecological behaviors.
- Participants will engage in a variety of community outreach initiatives (e.g., "bring a neighbor night," planning and delivering a specific community event).
- The Coordinator will collaborate with officials from each of the participating communities to facilitate the transfer of Project benefits.

3.0 Project Structure

With funding from Environment Canada's EcoAction Community Funding Program in place, the Project commenced on September 5, 2006 and concluded on April 27, 2007. During that time, small groups of residents from Charlottetown and Stratford engaged in moving toward more environmentally sustainable lifestyles. Participants in each group were provided with the information, tools, and encouragement to develop an appreciation for their own role in the biosphere and to make positive changes in the areas of transportation, food choices, material consumption, and household practices.

3.1 Participant Groups

The four groups of residents participating in the Project included 40 people representing 35 households (5 households were represented by 2 people each). The schedule and basic structure of the Project is provided in Table 1, below.

Table 1: Participant Groups

	Fall of 2006	
Group	**Charlottetown Group A**	**Stratford Group A**
Meeting Dates	Every Tuesday from September 26 to December 12	Every Thursday from October 5 to December 14
Number of Workshops	12	11
Number of Participants	10	8
Number of Households Represented	9	7
	Winter/Spring of 2007	
Group	**Charlottetown Group B**	**Stratford Group B**
Meeting Dates	Every Tuesday from February 6 to April 10	Every Thursday from February 8 to April 12
Number of Workshops	10*	10*
Number of Participants	11	11
Number of Households Represented	10	9

* The workshops held during the March break, during which time the documentary *An Inconvenient Truth* was shown, were optional for participants.

Group sizes were intentionally kept small to create a more personal learning environment and provide more opportunity for participants to interact with the Coordinator and each other than would be possible with larger sized groups. The continuity gained by having the groups meet weekly for the designated time periods allowed participants to develop a reasonable amount of familiarity with each other and with the Coordinator and also to develop a certain amount of momentum in their environmental endeavors.

3.2 Workshop Format

All workshops began at 7 p.m. and ended at 9 p.m.. A format for the workshops (as per Table 2, next page) had been developed in advance of the first meetings of Charlottetown Group A and Stratford Group A. (Note: the term "pro-environmental actions" will be introduced in this Table and will be used throughout the remainder of the report. Pro-environmental actions are actions that help participants lessen their impact on the environment.)

Table 2: Initial Workshop Format		
Time	**Workshop Element**	**Description**
7:00	In the News	Discussion of environmental news stories that occurred since the previous workshop
7:10	Tidbit Time	Introduction of miscellaneous environmental information
7:20	Action Feedback	Participant feedback on new pro-environmental actions taken since the previous workshop
7:30	Presentation	Presentation by a local environmental resource person
8:45	Action Forward	Introduction of new pro-environmental actions for participants to try in the upcoming week
9:00	Adjournment	Workshop adjourned

During the first few workshops, it soon became evident that the initial workshop format was too structured, contained too many elements, and did not allow sufficient time for participants to exchange information and experiences. Furthermore, it was very difficult to deliver the "Action Forward" segment at 8:45 because the presentation by the local environmental resource person would often go overtime – generally due to participants engaging the person in discussion. Therefore, adjustments were made to the format (as per Table 3, below) and this revised workshop format was used for the remainder of the Project.

Table 3: Revised Workshop Format		
Time	**Workshop Element**	**Description**
7:00	Housekeeping	Time to review various Project details with participants
7:10	Pro-Environmental Actions	Presentation and discussion of new pro-environmental actions; discussion of existing pro-environmental actions
7:50	Break	
8:00	Presentation	Presentation by a local environmental resource person
9:00	Adjournment	Workshop adjourned

There were always housekeeping details each week that had to be addressed with the participants, and the revised format allowed time for this to occur. Also, the revised format provided a forty minute block of time during which to introduce new pro-environmental actions and to share experiences relating to these actions (and experiences relating to pro-environmental actions adopted by participants prior to their entry into the Project).

The break, scheduled part way through the workshop, was a time for participants to stretch their legs and chat amongst themselves. It was also a logical time for the local environmental resource person to arrive and prepare for the presentation. By having the presentation as the last scheduled item for the evening, any overruns in time did not interfere with the delivery of other items. (Although he was not always successful, the Coordinator did try to keep presentations within their allotted time.)

3.3 Advisory Committee

In accordance with Project application documents, an advisory committee was established to provide the Coordinator with guidance and feedback on details relating to Project delivery. The following people generously donated their time to serve as members of the committee.

- Sarah Jane Bell, Bright Island Group
- Ben Hoteling, Instructor, Wildlife Conservation Technology Program, Holland College
- Robert Hughes, P.Eng., Chief Administrative Officer, Town of Stratford
- Grant MacLeod, President, P.E.I. Residential Construction Sector Council
- Don Mazer, Ph.D., Board Member, Environmental Coalition of Prince Edward Island
- Regina Wells, Technical Research Assistant, Environmental Issues Committee, City of Charlottetown

- Erin Swansburg, Climate Change Coordinator, P.E.I. Dept. of Environment, Energy & Forestry

It had originally been intended that the advisory committee would meet once per month over the eight month duration of the Project, and indeed, five meetings were held in the first five months of the Project. However, the committee met only once in the Project's last three months when it became evident that the Project was progressing quite satisfactorily and there was no need to schedule additional meetings.

The assistance provided to the Coordinator by the advisory committee and, on separate occasions, by individual members of the committee, was immensely valuable in addressing a variety of challenges that arose during the course of the Project and was greatly appreciated.

The minutes of the advisory committee meetings are included in Appendix A

4. Project Details

Within the basic Project structure described in Section 3, many additional activities, as described in the following subsections, occurred to facilitate the delivery of the Project and the attainment of its goals.

4.1 Participant Solicitation

The methods of soliciting Project participants for the fall and winter sessions included

- placing advertisements in the newspaper *The Guardian*,
- placing posters in Charlottetown City Hall and Stratford Town Hall and at various commercial establishments in both communities,
- sending a solicitation email to all provincial government employees,
- advertising on the Town of Stratford's website,
- putting an information article in the Town of Stratford's fall and winter newsletters, and
- including registration information in articles published in *The Guardian* on August 24 and September 7.

Although no formal feedback was solicited regarding the means by which participants learned of the Project, it appears, informally at least, that the newspaper advertisements and the email to all provincial government employees were the most effective mechanisms.

The response to the participant solicitation campaign in the fall was adequate. Each of the ten seats in Charlottetown Group A and eight of ten seats in Stratford Group A were filled. The response to the participant solicitation campaign in January was much stronger. All seats in the Charlottetown Group B and in Stratford Group B were filled (eleven seats in each group) and, between the two groups, ten people were left on a waiting list. It is known that several people who registered for the "B" groups did so because they knew someone who had been a participant in one of the "A" groups.

4.2 Portfolio of Existing and New Pro-Environmental Actions

An important feature of the Project was the customized "Portfolio of Existing and New Pro-Environmental Actions" that was prepared for participants representing 23 of the 35 registered households (see Appendix B for a sample portfolio) and served as a record of their existing and new pro-environmental actions. Discussion of the results contained in the portfolios is found in subsection 5.4.

Each participant was provided with a master list of pro-environmental actions (see Appendix B) containing more than 90 pro-environmental actions that were divided into the following categories.

- Improving Vehicle Fuel Efficiency
- Reducing Vehicle Use
- Making Green Food Choices
- Reducing Material Consumption
- Conserving Electricity
- Conserving Water
- Reducing Heating Requirements (Space/Water)
- Reducing Environmental Impact Outside the Home

The participants were invited to address each action on the master list by indicating whether they had already adopted the action (prior to entry into the Project), would like to adopt the action, or whether the action was not applicable to their situation at this time. It should be noted that this exercise was voluntary, although the Coordinator did encourage each participant to address the actions. (Participants from 33 of the 35 registered homes (that is, 94 percent) actually did so.)

The Coordinator then requested additional information from the participants to be used to quantify the annual benefits of many of the pro-environmental actions the participants had identified as having already adopted or as having wanted to adopt. This information was entered into an Excel spreadsheet that had been developed to calculate annual savings of money, gasoline, heating oil, carbon dioxide emissions, electricity and water (a sample of the spreadsheets is found in Appendix B). The Coordinator then compiled all the pro-environmental actions that the participant had adopted or wanted to adopt, including their respective qualitative or quantitative benefits, into a participant specific "Portfolio of Existing and New Pro-Environmental Behaviors." As mentioned at the beginning of this section, participants from 23 of the registered homes provided the requisite information. This means that participants from 70 percent of the homes that addressed the actions on the master list also provided the necessary information to complete their portfolio (23/33 x 100 = 70 percent).

4.3 Presentations by Local Environmental Resource People

Another important feature of the Project was the multitude of presentations made by local environmental resource people during the latter half of most of the workshops. The personal knowledge and experiences of these people and the enthusiasm with which they addressed their specific topics proved to be a very effective way in which to engage participants. More often than not, it was evident that the discussions between resource people and participants could go on for much longer than the time that was available.

Listed in Table 4, below, are the local environmental resource people who contributed their time to prepare and deliver presentations to the various participant groups.

Table 4: Workshop Presenters

Charlottetown Group A	Stratford Group A
Ecological Footprinting Shawn MacNeill, P.E.I. Dept. of the Environment	Residential Renewable Energy Technologies Stephen Howard, Owner, Renewable Lifestyles
Organic Apple Production Mike Beamish, Owner, Beamish Orchards	Solid Waste Management Gerry Moore, Chief Executive Officer, Island Waste Management Corporation
Public Transportation David MacKay, Program Coordinator, P.E.I. Public Transit Coalition	Organic Agriculture Liz Dacombe, Organic Agriculture Inspector
Ecological Household Practices Tony Reddin, Homeowner	Public Transportation Daniel MacRae, Public Outreach Officer, P.E.I. Public Transit Coalition
Municipal Water and Wastewater Craig Walker, P.Eng., Utility Manager, City of Charlottetown Watershed Health and Improvement Gary Fournier, Project Coordinator, Winter River Environmental Committee	State of the P.E.I. Environment John MacQuarrie, Deputy Minister, P.E.I. Dept. of the Environment
Solid Waste Management Heather Myers, Disposal Manager, Island Waste Management Corporation	Climate Change Tracy Brown, Project Coordinator, Bedeque Bay Environmental Management Association
Ecopsychology Don Mazer, Ph.D., Environmental Coalition of Prince Edward Island	State of Wildlife on P.E.I. Gerald MacDougall, Manager, Forest, Fish & Wildlife Division, P.E.I. Dept. of Environment
Climate Change Sarah-Jane Bell, Bright Island Group	Ecological Household Practices Sharon Labchuk, Homeowner (also Leader of the P.E.I. Green Party)
State of the P.E.I. Environment Diane Griffin, former Deputy Minister of the P.E.I. Dept. of the Environment	

TABLE 4 (cont'd)	
Charlottetown Group B	**Stratford Group B**
Brookfield Compost Facility Heather Myers, Disposal Manager, Island Waste Management Corporation	Brookfield Compost Facility Heather Myers, Disposal Manager, Island Waste Management Corporation
P.E.I.'s Hidden Wilderness John Sylvester, Owner, John Sylvester Photography	Ecological Forestry Gary Schneider, Manager, MacPhail Woods Ecological Forestry Project
Organic Apple Production Mike Beamish, Owner, Beamish Orchards	Organic Agriculture Margie Loo, Owner, Elderflower Organic Farm
Watershed Health and Improvement Gary Fournier, Project Coordinator, Winter River Environmental Committee	Public Transportation Daniel MacRae, Public Outreach Officer, P.E.I. Public Transit Coalition
Municipal Water and Wastewater Craig Walker, P.Eng., Utility Manager, City of Charlottetown	Municipal Water & Wastewater Joe Driscoll, Supervisor, Public Works and Utilities Department, Town of Stratford
Deep Ecology Regina Wells, Technical Research Assistant, Environmental Issues Committee, City of Charlottetown	State of the P.E.I. Environment Katherine Clough, Ph.D., Co-Author of the Dept. of the Environment's 2003 "State of the Environment" report

4.4 Resources for Participants

The Project budget allowed for the purchase of a variety of resources (energy meters, DVDs, and books) relating to the goals of the Project. Participants could avail themselves of these resources by signing them out for one or several weeks at a time. By far, the most popular items were the energy meters that were used to measure electricity consumption and to determine "standby" power losses of appliances and electronic equipment. (The meters used were the EM100 manufactured by UPM.) Next popular were DVDs such as *Affluenza*, *An Inconvenient Truth*, and *Super Size Me*. The least popular resources, although appreciated by the few people who signed them out, were books dealing with climate change and materialism.

4.5 Community Outreach Events

Through the following events, the influence of the Project was extended beyond the registered participants and into the community. The events denoted with an asterisk occurred by invitation; the other events were initiated by the Coordinator.

- December 14: A "bring a friend night" was held for the Stratford Group A during which time "An Inconvenient Truth" was shown. (3 extra participants)
- January 9*: A 45-minute presentation on pro-environmental actions was made to the Milton chapter of the P.E.I. Women's Institute. (11 participants)
- February 5: A two-hour workshop on pro-environmental actions was held at Saints Peter and Paul Antiochian Church in Charlottetown. (6 participants)
- February 21: A two-hour workshop on pro-environmental actions was held at Park Royal United Church in Charlottetown. (4 participants)
- February 23, March 2 and March 9: A series of three 90-minute workshops on pro-environmental actions was made at the CHANCES Family Resource Centre in Stratford. (3 participants)
- March 21 to 23, 26 to 30, and April 2*: A 9-part series entitled "Eco-Acts" with Island Morning host Karen Mair, Coordinator Rod Dempsey, and Project participant Dr. Alice Crook was aired on CBC Radio One's "Island Morning" show. (While it is difficult to estimate how many people were influenced by this series, the Coordinator has received several favorable comments from people who heard the series.)
- April 18*: A one-hour workshop summarizing the P.E.I. Eco-Home Project and highlighting five pro-environmental actions was conducted at the annual general meeting of the Gulf Shore Community Health Corporation in North Rustico. (30 participants)

- April 26*: Four 20-minute presentations (one presentation per grade) on four easy pro-environmental actions were made to all of the students in grades 3,4,5,and 6 at Glen Stewart Elementary School in Stratford. (100 children per grade x 4 grades = 400 children)

Therefore, in addition to the 40 participants registered for the Project, at least 400 children and 57 other adults were influenced, to some extent, by the Project.

4.6 Community Support

As evidenced by the list of local environmental resource people in Section 4.4, the Project was strongly supported by the community. Community support, through myriad "in-kind contributions," was necessary not only to ensure the financial viability of the Project and to provide an extensive human resource base, but also to provide most of the supporting infrastructure (and other services) required by the Project. Table 5 lists nine organizations and their respective contributions (other than for workshop presenters) to the Project.

Table 5: In-kind Support from Community Members

Contributor	Details of Contributions
Bright Island Group	Advisory committee member
Callbeck's Home Hardware (Stratford)	$50 gift certificates for energy-efficient merchandise for all Stratford participants
CHANCES Family Resource Centre	Meeting room for a 3-part environmental series to parents
City of Charlottetown	Meeting room for advisory committee meetings Participant registration services
Environmental Coalition of Prince Edward Island	Project administration Project consultation
Holland College	Advisory committee member Meeting room for Charlottetown Groups A and B Computer equipment for meeting room Website design by Interactive Multimedia students 10 home inspections by Electrical Technology students 10 home inspections by HVAC students
Island Services Network	Server space for website
P.E.I. Dept. of Environment, Energy & Forestry	Registration for Coordinator at a community-based social marketing workshop Advisory committee member Project consultation
ReTherm Energy Systems Inc.	10 home energy reviews
Town of Stratford	Meeting rooms for Stratford Groups A and B Computer equipment for meeting rooms Participant registration services Advisory committee member

The great extent to which this Project was supported by the community is telling of the strong interest that community members have in environmental issues and their willingness to express that interest in a concrete way. On more than one occasion, while making "cold calls" to potential Project supporters, the Coordinator was impressed by the significant level of environmental concern communicated to him. Sometimes, he even felt that the ensuing relationships with the supporters were symbiotic in that while the Project obviously benefited by the contributions made by the supporters, the supporters were also benefiting by using the Project as a vehicle by which to vicariously take action to express their own environmental concerns.

5.0 Project Results

The following subsections detail the results of the Project.

5.1 Participant Demographics

Table 6 provides a summary of the gender and age of the forty Project participants. (Note: participant ages were estimated.)

Table 6: Participant Gender and Age

	Under 20	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70+	Total
Female	1	1	4	5	8	2	3	24
Male	0	1	2	5	4	2	2	16

Although it may not be statistically relevant due to the small sample size, the data indicates the response to the Project was greatest by people in the 40 – 59 age range (22 of 40 participants) and greater by women than by men (24 versus 16 participants). This is not to say there is any particular distribution of gender/age that is preferred. However, it is interesting to speculate on reasons why a participant solicitation campaign might attract more members of one demographic group rather than another.

The gender/age distribution of participants was a matter that was discussed at the October 10 Advisory Committee meeting (see Appendix A) after participants had registered for the Charlottetown A and Stratford A groups. At that time, the gender/age distribution for the two groups indicated a predominance of women in the 50 – 70+ age range. Questions were raised as to why very few younger women were attracted to the Project and why there were no men under the age of 50. Some discussion was held on ways in which a more diverse mix of people could be attracted to the workshops beginning in 2007.

Interestingly, even though the same participant solicitation methods were used in January 2007, the gender/age distribution of the Charlottetown B and Stratford B groups were quite diverse - ranging from a female teenager to a gentleman in his eighties. This suggests that perhaps there was nothing inherent in the participant solicitation campaign that attracted or suppressed the participation of any particular demographic group – rather the composition of each group was more likely determined by random events.

On a delivery level, the specific gender/age distribution among members of each group was not considered to be beneficial nor detrimental. Each group was composed of unique individuals who had talents and experiences to share and the Coordinator found it rewarding and enjoyable (as expected) to work with each of them.

5.2 Media Reports

The Project received significant coverage in the local media as per the details provided below. (Copies of the articles from The Guardian are found in Appendix C).

Articles in *The Guardian* (P.E.I.'s highest circulation newspaper):

- August 24, 2006: "Homeowners learn to help environment"
- September 6, 2006: "Here's a green project with a little buzz. This project doesn't just give out information. It provides the support people need to make lifestyle changes."
- September 7, 2006: "Taking EcoAction – Project to explore environmental connections"
- November 25, 2006: "Going green – Islanders become more aware and begin to make changes in their lives thanks to the P.E.I. Eco-Home Project." (The entire page C1 was devoted to this article.)

- December 30, 2006: “Checking in with some friends: It’s time for the annual updates on several Islanders who were introduced to Guardian readers in 2006”

An article in *The Surveyor* (Holland College’s student newspaper):

- November 10, 2006: “Little Island, big feet says report”

On CBC Radio One, Charlottetown:

- March 21 to 23, 26 to 30, and April 2: A 9-part series entitled “Eco-Acts” with Island Morning host Karen Mair, Coordinator Rod Dempsey, and Project participant Dr. Alice Crook. (Each episode ran for four or five minutes and covered several actions that were promoted in the Project.)

5.3 New Ecological Paradigm Survey

Participants were requested to complete the revised New Ecological Paradigm survey[16] of global environment views at the beginning and at the end of their involvement in the Project (see Appendix D). The survey’s fifteen statements were divided into five categories: limits to growth, antianthropocentrism, fragility of Nature balance, rejection of exemptionalism, and possibility of an ecocrisis. Participants were to respond to each statement by indicating whether they strongly agree, mildly agree, are unsure, mildly disagree, or strongly disagree with it.

Twenty-nine participants completed the survey both at the beginning and at the end of the Project. The average results are shown below in Table 7.

Table 7: Results from the New Ecological Paradigm Survey

Score	Significance of Score
1	Strong disagreement with a pro-environmental position on the global environment
2	Mild disagreement with a pro-environmental position on the global environment
3	Neutral
4	Mild agreement with a pro-environmental position on the global environment
5	Strong agreement with a pro-environmental position on the global environment
3.92	**Average participant score before Project**
4.14	**Average participant score after Project**

While the average increase in pre/post scores from 3.92 to 4.14 is modest, it is worth noting the likelihood that people sufficiently motivated to participate in the Project would already be predisposed toward pro-environmental global views, and the potential of the Project to increase their score would be less than might be possible with people not so predisposed.

5.4 Portfolios of Existing and New Pro-Environmental Actions

As mentioned in subsection 4.2, portfolios were prepared for participants from 23 of the 35 registered households.

The majority of the pro-environmental actions on the master list were actions that could be adopted by the participants without requiring them to purchase equipment or materials – actions such as improving vehicle fuel efficiency by keeping their vehicle free of unnecessary weight, or conserving electricity by using their dishwasher only when it was full. Some actions did, however, necessitate the purchase of equipment or materials – actions such as reducing space heating requirements by installing insulation on hot water pipes, and conserving water (and reducing domestic hot water requirements) by installing an energy-efficient showerhead (using no more than 5 liters of water per minute).

Another distinction between actions is that some were recurring while others were non-recurring. Recurring actions essentially required the participant to adopt a new behavior. For example, to eliminate standby power consumption by turning a computer and its peripherals off at the power bar, the participant had to turn the power bar switch off (after powering down the computer) every time it was desired to eliminate standby power. The prerequisite conditions that would have to be satisfied for this new behavior to become habitual to the participant would include the participant's desire to eliminate standby power, his/her capacity to remember to turn off the switch, and the ease with which the switch could be accessed.

Non-recurring actions were not about modifying behavior because by definition, non-recurring actions only have to occur once for the pro-environmental benefit to occur. Rather, non-recurring actions were more about motivating the participant, on a single occasion, to fulfill an action such as, for example, installing a compact fluorescent light bulb. It should be recognized that even though some actions are non-recurrent, barriers may still exist to hinder their adoption. In the case of a compact fluorescent light bulb, the bulb has to be purchased and installed. This may involve barriers relating to cost and transportation and to physical skills such as mobility (being able to climb a step-ladder), strength, and dexterity.

Table 8, below, provides a summary of the quantitative outcomes (annual savings) that participants can realize from the new pro-environmental actions they identified in their portfolios.

Table 8: Quantitative Outcomes (Annual Savings) of New Pro-Environmental Actions

Participant No.	$	Gasoline (L)	Oil (L)	CO_2 (kg)	Electricity (kWh)	Water (L)
1	348	93	266	1,772	735	52,291
2	261	70	204	1,390	594	0
3	356	158	233	1,259	511	24,218
4	24	0	35	84	0	7,738
5	68	50	0	337	192	6,935
6	185	89	28	650	90	22,571
7	94	21	28	739	542	624
8	208	130	0	1,232	815	43,141
9	466	451	47	1,377	158	4,380
10	270	232	19	1,117	457	17,246
11	134	0	159	691	232	36,000
12	295	65	256	1,457	539	37,978
13	163	141	0	683	304	1,643
14	82	0	0	894	792	728
15	80	4	19	852	701	1,825
16	1,965	1,988	38	5,342	482	8,814
17	472	247	242	2,089	747	32,097
18	237	51	211	1,363	621	8,320
19	152	26	282	934	133	36,910
20	471	127	362	2,436	1,021	38,592
21	109	47	55	561	265	10,013
22	684	235	527	3,112	995	47,582
23	292	98	170	1,582	787	32,916
Total	**7,416**	**4,323**	**3181**	**31,953**	**11,713**	**472,562**
Average	**322**	**188**	**138**	**1,389**	**509**	**20,546**
Average (excluding the highest and lowest individual values in each category)						
	258	**111**	**126**	**1,263**	**509**	**20,013**

Whereas participants selected pro-environmental actions in accordance with their individual circumstances, each portfolio contained a different number and selection of actions. There were, however, many actions that were common to participants. Listed in Table 9 are the most common existing pro-environmental actions (those actions that participants had adopted prior to their entry into the Project) and new pro-environmental actions.

Table 9: Most Common Pro-Environmental Actions

Category	Existing Pro-Environmental Actions	New Pro-Environmental Actions
Improving Vehicle Fuel Efficiency	Keeping my vehicle well maintained	Checking my tire pressure every month
	Keeping my vehicle and its trunk free of unnecessary items/weight	Trying to drive at 90 km/hr (and never faster than 100 km/hr) when on the highway
	Accelerating gradually rather than quickly	Keeping my vehicle and its trunk free of unnecessary items/weight
Reducing Vehicle Use	Choosing services close to home or work	Using public transit
	Combining errands into one trip and efficiently planning my route	Walking
	Using lists to prevent having to return to stores for forgotten items	Choosing services close to home or work
Making Green Food Choices	Purchasing produce from local farmers	Checking labels and not purchasing foods that have traveled an excessive distance
	Taking my lunch to work rather than eating out	Purchasing food with little or no packaging
	Not frequenting fast-food restaurants	Maintaining a few vegetables inside during the winter
Reducing Material Consumption	Giving away items I no longer need	Refusing to purchase food items packaged in type 6 or 7 plastic
	Trying to repair or reuse an item before recycling or discarding it	Using cloth (or reusable) bags to carry my groceries
	Using both sides of paper before recycling	Receiving monthly bills by email rather than by mail
Conserving Electricity	Turning off lights, televisions, computers, stereos and other electricity consuming devices when they are not being used	Turning of my oven and letting it “coast” for the last ten or fifteen minutes to use its residual heat
	Using lids on boiling pots and pans	Turning my computer and its peripherals off at the power bar to eliminate standby power consumption
	Using my dishwasher only when it is full	Regularly cleaning the heating coils and rubber door seals of my refrigerator and freezer
Conserving Water	Using a low-flow tooth brushing technique	Installing an energy-efficient showerhead in my shower
	Keeping a bottle of drinking water in the refrigerator rather than running the faucet for cool water	Adding displacement containers to my toilet tank
	Putting the stopper in the kitchen sink before running hot water for dishwashing	Putting the stopper in the kitchen sink before running hot water for dishwashing

Table 9 (cont'd)		
Category	**Most common existing pro-environmental actions**	**Most common new pro-environmental actions**
Reducing Space & Water Heating Requirements	Closing my window blinds/curtains during the night and opening them during the day in winter	Installing an energy-efficient showerhead in my shower
	Using cold water in the clothes washer	Insulating at least the first two meters of pipe from my water heater
	Keeping my thermostat set back to at least 65^0 Fahrenheit during the night	Installing insulating foam gaskets behind the cover plates of my wall outlets and wall switches
Reducing Impact Outside the Home	Using manual tools to maintain my flower beds	Using corn gluten meal rather than fertilizer on my lawn
	Leaving grass clippings on lawn	Collecting rainwater for gardening purposes
	Replacing part of my lawn with native shrubs/trees and natural landscaping	Using a manual reel mower to cut my lawn

5.5 Participant Exit Survey

Most of the Project participants completed an exit survey that consisted of ten questions. Actual participant responses to the survey are found in Appendix D. Below, each question from the survey is listed and is accompanied with typical responses and commentary provided by the Coordinator.

1. **What compelled you to register for the Project?**
   The two primary reasons that people registered for the Project (twenty of twenty-seven responses) were their desire to conserve energy and resources and their concern for the environment.

   That these are the predominant reasons is suggestive that people are making the connection between their lifestyles and the environment. Conserving energy and resources is a way in which the individual can make a difference – albeit a small difference, but a difference all the same. Many individuals realize that, if enough people adopt similar pro-environmental actions, the cumulative benefit for the environment will be quite significant.

2. **Was the pre-entrance interview with the Coordinator useful to you? If yes, how?** (This question was answered only by the participants from Charlottetown Group A and Stratford Group A all of whom partook in a pre-entrance interview, mostly in their homes, prior to their entrance into the Project.) Six of the eight participants responding to this question felt the interview was useful and that it helped them consider the Project in a meaningful context. The other two participants were more neutral in their response.

   The Coordinator found the sixteen interviews to be quite useful primarily in that it provided him with a more accurate context of each participant. During the Project, the Coordinator was better able to understand the participants' concerns and comments regarding how they intended to lessen their environmental impact. Having visited these people in their homes, the Coordinator was more sensitive to the wide range of socioeconomic backgrounds of the participants and the barriers that might preclude them from adopting specific pro-environmental actions.

   The time necessary to schedule, travel to/from, and conduct the interviews was quite significant and because of time constraints, pre-entrance interviews were not held with participants from Charlottetown Group B and Stratford Group B. There also comes a point of diminishing return where visiting more homes would do little to expose the Coordinator to a greater range of socioeconomic backgrounds or potential barriers to specific pro-environmental actions.

2. **Did signing a pledge form at the beginning of the Project influence your attendance or participation? If yes, how?** (This question was answered only by participants from Charlottetown Group A and Stratford Group A, all of whom were requested to sign a form (which they all did) to pledge to participate in the Project to the best of their ability. See Appendix E for a copy of the form.)
   Seven of eight respondents indicated their attendance or participation was not influenced by having signed the form.

3. **Did receiving letters of recognition from the P.E.I. Department of the Environment and the City of Charlottetown or Town of Stratford have an influence on you? If yes, how?**
   All participants received a letter from the P.E.I. Department of Energy, Energy and Forestry and a letter from either the City of Charlottetown or Town of Stratford, depending in which community they were registered, congratulating them on their participation in the Project (see Appendix E for samples of the letters). About half of the twenty-two respondents indicated they appreciated receiving the letters; although, the letters did not influence them. Fewer than five respondents reported being influenced by the letters.

4. **Was the delivery format effective in meeting your needs?**
   At least twenty-five of the twenty-six respondents found the delivery format to be effective in meeting their needs.

   The workshop format described in Section 3.2 offered participants a significant degree of variety in that many local environmental resource people presented to the groups in addition to the Coordinator. Therefore, participants were able to benefit from the knowledge and experiences of many pro-environmentally orientated people from the community.

6.a What aspect of the experience was most useful?
   There was a wide range of answers to this question by the twenty-six respondents but some of the more common themes expressed included
   - the benefits of having guest presenters talk on a variety of topics,
   - discussions amongst participants, and
   - practical tips on reducing our environmental impact.

6.b What aspect of the experience was least helpful?
   The five responses to this question were generally unrelated and included: some concern about other participants talking too much or making unsubstantiated statements, having to complete an ecological footprinting survey (an exercise in which the respondent had participated many times before), completing forms and surveys in general, and not having enough time in each class.

7. **How could the coordinator be more helpful to participants in creating behavioral change?**
   Seventeen of the nineteen respondents to this question were quite satisfied with the Coordinator's existing approach which was straight forward and non-judgmental. The other two respondents suggested that a more task oriented/framework approach might be helpful.

   From the outset of the Project, the Coordinator decided to adopt a supportive and non-threatening approach to conveying information and conducting discussions. This is not to say that he was, in any way, casual or dismissive of the importance of all the environmental content in the Project, but that he deliberately sought to lay the information out before the participants and let them accept or reject it as they saw fit. Participants accepting information and adopting new pro-environmental actions were encouraged to continue while participants not so inclined were often politely questioned so that the rest of the group could understand that what works for one person does not necessarily work for other people.

8. **Would you like to be challenged to adopt pro-environmental behaviors? Why or why not?**
   Fifteen of twenty-four respondents would like to be challenged to adopt pro-environmental behaviors, while the remaining respondents were more qualified in their answers or simply would not appreciate being challenged. It was evident from the responses that people want to be respected as they respond to a challenge and the challenge must be appropriate to their capacity.

9. **What aspects of the program were most helpful in prompting behavioral change in you?**
   The most common answers among the twenty-five respondents were the provision of information and the presentations made by local environmental resource people.

   The answer "provision of information" should be clarified as information was provided in a variety of ways: PowerPoint slides were used to introduce pro-environmental actions and convey potential annual savings, considerable discussion occurred among participants regarding actions some of them had already taken to lessen their environmental impact and regarding new actions, and some DVDs and books were made available to participants. The presentations made by local environmental resource people were really also a means whereby information was provided.

   What is important about the provision of information during the Project is that it was almost exclusively presented in an active manner – that is, it was delivered by people. This provided participants the opportunity to become engaged in the delivery process and to interact with the various presenters.

10. **What would you change to make the experience more useful/helpful for participants?**
    There were no dominant themes among the twenty-two responses to this question; although, three respondents expressed an interest in having field trips and there was some interest in new residential technologies (ground source heat pumps, wind turbines, etc.). Other responses ranged from providing information on what to do when constructing a new house to adding more global information (e.g., what the Europeans are doing to reduce greenhouse gas emissions).

5.6 Booster Meetings

It had been planned that Charlottetown Group A and Stratford Group A would each reconvene in February and in April for "booster" meetings. The purpose of the meetings would be to allow the Coordinator to informally determine how the participants in each group were faring in continuing their new pro-environmental actions and to offer additional support to them. It would also provide an opportunity for participants to share their experiences of the previous months with each other. While the concept behind the provision of the booster meetings was certainly logical and was expected to add value to the participants' experience, the reality was somewhat different.

Most of the participants from Charlottetown Group A met on February 20 and two of the participants from Stratford Group A met on February 12. The consensus among participants was that they were progressing well in maintaining their repertoire of new pro-environmental actions. However, the Coordinator sensed that there was a general feeling that the meetings were anticlimactic. Indeed, because it had been two months since the participants last met and because no new information was being introduced at these meetings nor was there a guest presenter, the underlying tone of the meetings were decidedly less vigorous than had been the case with the workshops held in the fall. When asked, the participants also commented that they didn't feel there was a need for a second booster meeting in April.

This failure of the booster meetings to actually provide a pro-environmental "boost" to the participants may have had more to do with the shift away from entertaining and proactive weekly workshops to an isolated meeting that was decidedly reflective in nature. Perhaps, rather than having a meeting based solely on dialogue and feedback, it might have been better to incorporate one final guest presentation into the meeting.

6.0 Observations by the Coordinator

The following anecdotal observations were made by the Coordinator over the duration of the Project. They are presented here in random order.

- It is important to be non-judgmental when encouraging people to adopt new actions.

- It is better to let people draw their own conclusions from the environmental evidence than to draw conclusions for them.

- Pro-environmental information and actions should be presented, at least to the extent that courtesy and familiarity will allow, in a positive, encouraging, manner that will provoke some consideration on the part of the participant yet not "box them in" by leaving them feeling they have no choice but to accept the information or actions.

- Some people might appreciate being challenged in adopting new pro-environmental actions while others may not. If a delivery approach involving challenges is to be considered, it would be important to know how the participants feel about it. However, unless people have expressly agreed to an assertive approach to issuing challenges, it may be more productive to allow them to "warm up" to specific actions in their own time.

- It is important to recognize the in-kind contributions made by volunteers – Following up with a letter of appreciation is essential.

- Having a Project with many guest presenters makes for interesting and diverse workshops (which participants seem to appreciate) but might become problematic if the Project develops into a longer term program – particularly if it is expected that guest presenters will continue to contribute their time on an in-kind basis. Goodwill can only extend so far. Over a longer term, it would be expected that guest presenters would have to be appropriately compensated.

- Many people being approached to be a guest presenter require at least a month's notice (and some require several months notice) before a specific presentation date. The task of contacting and scheduling presenters should begin as is practical.

- Many participants have strong feelings about the environment and are highly motivated to take action to lessen their environmental impact. As a Coordinator, never assume to have a monopoly on such feelings and motivation.

- Always listen to participants and acknowledge their experiences. Do whatever you can to facilitate the transfer of relevant experiences to other participants.

- For the most part, participants wanted to be guided in developing their environmental awareness and in adopting new pro-environmental actions. While allowing participants to be self-determining in developing their own Project agenda is a nice concept, and may engender a stronger feeling of ownership over ensuing pro-environmental actions, most participants do not have the time (or, in many instances, the inclination) for such development. Such a process could also create significant management challenges for the Coordinator as individual participants in each group might want to pursue specific avenues of interest not common to other participants. One option, however, might be for the Coordinator to work with the participants early on in their workshop series to set the agenda for the latter workshops. This would allow the Coordinator sufficient time to prepare materials and arrange for local environmental resource people to make presentations as may be necessary.

- Everyone has their own criteria as to what pro-environmental actions are appropriate (and possible) for them to adopt. It is important to accept that some actions, no matter how convenient and how well they work for you, are simply not practical for other people to adopt.

- Callbeck's Home Hardware (Stratford) had generously offered the participants from Stratford Groups A and B a $50 certificate toward the purchase of energy-efficient merchandise. During the latter part of April, the Coordinator checked with Home Hardware and was surprised to find that three participants from Stratford Group A and two participants from Stratford Group B had not redeemed their certificates. The participants from Group A had at least five months to redeem their certificates while the participants from Group B had at least two months. While the Coordinator felt that the certificate would be a strong incentive for all participants to acquire energy-efficient merchandise, it appears that it was not an incentive for all participants. The Coordinator did not contact the five participants to inquire as to why they did not redeem the certificate but speculates that reasons may include lack of time, forgetfulness, and a household income sufficiently high that a $50 certificate may be considered a triviality.

- Charlottetown Home Hardware was gracious enough to offer the participants from Charlottetown Groups A and B a discount on energy-efficient merchandise (up to a total of $50 per participant). For reasons relating to the inconvenience of the process that participants had to follow to obtain the discount, however, the offer was not well utilized. In order for participants to obtain their discount, they had to seek out one of the two employees who were authorized to approve the discount. Once they had found the employee (which had been problematic for at least one participant), the participant had to wait while the employee manually worked out the individual discount for each item the participant had selected. During a subsequent workshop, one participant remarked that if she had known how long this process could take, she would have gladly forgone the discount and proceeded directly to the checkout.

  In February, the Coordinator shared this feedback with his contact at Home Hardware and was told that they were in the process of establishing a "customer profile" that would allow participants to receive their discounts directly from any cashier at the checkout. Unfortunately, the process was not in place before the Project concluded in April.

  The purpose of including this observation in the report is not to criticize Home Hardware – at all times their staff acted professionally and treated the Project participants with the utmost courtesy – rather, it is to convey that if a process is not convenient for the participant, the participant will cease to follow it.

- The small number of participants (ranging from eight to eleven) in each group made for a non-threatening and comfortable social environment that was conducive to the exchange of information between the Coordinator and participants and among participants. Although increasing the size of the group would improve the Project cost per participant ratio, it would also significantly alter the casual dynamic that was established.

- On several occasions, the Coordinator sensed that a few people with whom he interacted (including participants) had preconceived ideas as to what it meant to become involved with someone from an "environmental group." They appeared to be expecting to be told, in unconditional terms, what they should be doing environmentally; they later seemed relieved that such a militaristic approach was not used. The point in raising this anecdote is that the public may not be sufficiently informed as to be able to distinguish between environmental groups that advocate the use of uncompromising tactics to affect change and those that take a more gentle and conciliatory approach with the public to ultimately reach similar goals.

7.0 Conclusion

It is apparent from the previous sections of this report that the Prince Edward Island Eco-Home Project was successful in meeting its goals. That is, participants increased their ecological awareness and reduced the size of their ecological footprint and that much of the experience of the participants was transferred into the community at large. However, while it is important to recognize the attainment of Project goals, it is also important to recognize other results, some of which may have been mentioned previously but which warrant reiteration.

First among these is the validation of the considerable level of support provided to the Project by the local community. The unwavering support and in-kind contributions provided by the Environmental Coalition of Prince Edward Island was essential to the Project's formation and delivery. The involvement of the City of Charlottetown, the Town of Stratford, and the P.E.I. Department of Environment, Energy and Forestry not only greatly aided in the functioning of the Project but also served as an important public endorsement of the Project's goals and objectives. The additional support provided by the Bright Island Group, Callbeck's Home Hardware (Stratford), CHANCES Family Resource Centre, Holland College, Island Services Network and ReTherm Energy Systems strengthened this endorsement and further increased the Project's capacity and scope.

(Note: while Environment Canada may not be considered part of the local community, it is part of the larger environmental community and the financial support it provided through its EcoAction Community Funding Program was critical to the Project's advancement.)

Second, the public appetite for environmental education has been tested and has been found to be significant. It is particularly encouraging that public interest in the Project increased substantially between the time of the Project's commencement and its conclusion. (It is likely that word of mouth and favorable coverage in the media helped fuel this increase.)

Third, the Environmental Coalition of Prince Edward Island (and by association the City of Charlottetown and the Town of Stratford) has now gained this additional experience which may be used for future ventures into community-based environmental education (particularly projects involving participants on a recurrent basis). It is hoped that many of the elements from this Project could be modified for use in an on-going community-based program designed to meet the environmental needs of community members.

Lastly, it has been demonstrated that many of the resources (e.g., technical expertise, advertising services, meeting rooms) necessary to deliver community-based environmental education already exist within the community. Longer term programming may require the creation of formal partnerships, but it is apparent that the most important resources of all, those being goodwill and a genuine concern for the environment, are already present and in considerable abundance within the community.

APPENDIX A

Minutes of Advisory Committee Meetings

- September 7, 2006
- October 10, 2006
- October 31, 2006
- December 5, 2006
- January 23, 2007
- March 13, 2007

APPENDIX B

Portfolio of Existing and New Pro-Environmental Actions

Note: This portfolio was developed for one of the Project Participants; although, the name has been changed to respect the participant's privacy.

Master List of Pro-Environmental Actions

APPENDIX C

Articles Published in *The Guardian*

- August 24, 2006
- September 6, 2006
- September 7, 2006
- November 25, 2006
- December 30, 2007

APPENDIX D

New Ecological Paradigm Survey

Responses to Participant Exit Survey

APPENDIX E

Participant Pledge

Letters of Recognition

Works Cited

Works Cited

1. World Wildlife Fund. (2004). *Living planet report 2004*. Retrieved April 15, 2005 from http://assets.panda.org/downloads/lpr2004.pdf

2. GPI Atlantic. (2003). *The Prince Edward Island ecological footprint.* Genuine Progress Index for Atlantic Canada. September, 2003.

3. Statistics Canada. (2003). *Analysis series, 2001 census.* Retrieved February 4, 2006 from http://www12.statcan.ca/english/census01/products/analytic/companion/pow/bycar.cfm

4. Prince Edward Island Department of Fisheries, Aquaculture and Environment. (2003). *State of the Environment.* (p.23)

5. The Guardian. (June 27, 2003). *Province releases state of environment report.* The Guardian newspaper. Charlottetown, Prince Edward Island.

6. The Guardian. (July 29, 2004). *Environment department hopes to reduce greenhouse gases with proper tire pressure.* The Guardian newspaper. Charlottetown, Prince Edward Island.

7. Government of Canada. (2005). *Your guide to the one-tonne challenge*. (p.8)

8. Soil Conservation Council of Canada. (2001). *Global warming and agriculture: Fossil fuel use*. Retrieved February 4, 2006 from http://www.soilcc.ca/fact/pdfs/Factsheet%203%20-fossil%20fuel.pdf

9. United Nations Development Programme. (1998). *Human development report 1998 overview.*

10. Wackernagel, M. & Rees, W. (1996). *Our ecological footprint: Reducing human impact on the earth*. New Society Publishers, Gabriola Island, B.C. (p.7)

11. Government of Canada. (2005)., op cit. (p.2)

12. The Canadian Lung Association. (2004). *Indoor air quality at home*. Retrieved February 4, 2006 from http://www.lung.ca/cando/home.html

13. Government of Canada. (2005)., op cit. (p.18)

14. MacKenzie-Mohr, D. & Smith, W. (2003). *Fostering sustainable behavior: An introduction to social based marketing*. Gabriola Island, British Columbia: New Society Publishers. (p.7)

15. Ibid, (p.95)

16. Dunlap, R., Van Liere, K., Mertig, A., and Jones, R. (2000). *Measuring endorsement of the new ecological paradigm: A revised NEP scale*. Journal of Social Issues, Vol. 56, No. 3, 2000, pp. 425- 442