

# Shrinking carbon footprints

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Would shrinking your carbon footprint, recycling more, and going green be easier if you could monitor your household's environmental impact? That's the question a team of Canadian industry consultants set out to answer. They report their findings in a forthcoming issue of the *International Journal of Environmental Technology and Management* from Inderscience Publishers.

The researchers recruited twenty willing households into a study group to assess how well environmentally sustainable behavior might be motivated by providing the householders with a clear and detailed picture of their impact on the environment and offering them tangible reasons for improvement and tailored solutions to problems.

They recorded and compared heating fuel, electricity, water, vehicle fuel costs and waste generation for each household and on the basis of this data recommended cost-effective measures to reduce consumption.

The team found that, on average, just over 25% of the recommended measures were implemented, which resulted in an estimated greenhouse gas reduction of about two tonnes for each household. This quantity of carbon emissions is about the same as one person making a return flight from Toronto to Vancouver and has an estimated environmental offsetting cost of around \$30.

There were wide variations between households, however, demonstrating the potential to reduce environmental impact through lifestyle, conservation, and energy-conscious retrofits to older properties.

Despite initiatives such as Canada's "One Tonne Challenge" many individuals are increasingly concerned with environmental issues yet paradoxically feel that their personal efforts will either have little or no effect on global climate change and so are not adopting green principles.

"Participants commented that they became much more aware of their energy consumption and environmental impact by taking part in the year-long study and were, as a result, motivated to make changes to their behavior and physical surroundings," the researchers say.

The researchers recommended a raft of environmental measures for the participants. These included replacing incandescent with compact fluorescent bulbs, activating energy saving settings on computers, installing ceiling fans, and reducing air-conditioning use. They also suggested several popular heating energy reduction measures including improving the air tightness of the home, insulating foundations, walls and hot water tanks.

Vehicle emissions were reduced by lower vehicle use and using ethanol blended gasoline, while water was saved by replacing toilets with low-water models, installing kitchen faucet aerators, reducing sprinkler use and installing rain barrels. All households were already recycling and 90% composting before the study began.

The team found that of the thirty or so environmental measures that they recommended, only thirteen were implemented by one in five or more of the households.

The follow-up survey of participants indicated that their priorities regarding home upgrades were in improving comfort and lowering operating costs rather than reducing environmental impact. "The major obstacles to reducing environmental impact were seen as financial cost and lack of time and knowledge to evaluate and implement

environmental measures," the team reported. However, for those measures where a payback was possible in less than ten years, households were more likely to implement the measures.

An additional socioeconomic factor that has been overlooked in other studies emerged from the present research. There were several common factors among the households with the highest environmental impact per occupant. These were higher floor area per occupant, than average, multiple vehicle ownership, greater mileage, and occupants being 40-something adults with no children living at home. "These lifestyle factors appeared to have more impact than the environmental features we think of most often like the quality of the building envelope or energy efficiency of appliances and fixtures," the researchers say.

The project demonstrated that most homeowners are willing to take steps to reduce their environmental impact if they are provided with practical recommendations that will improve home comforts and reduce costs. But, there was enormous variance in adopting such measures and lowering household carbon footprint even within the same community, which the researchers suggest implies that new regulations, grants, and taxes to make good environmental practices and products a better investment than less environmentally sound alternatives could be the most effective way to change behavior on a large scale.

Source: Inderscience Publishers

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