

Article

Individuals' changes in their lifestyle to build a sustainable environment

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Abstract

The unsustainable use of natural resources is not a current issue and it began since the Agricultural Revolution, which characterizes the change in the relationship between man and nature. The first major environmental impacts emerged and as a result of this new way of life that went from nomadism to sedentary lifestyles, there was an increase of human productive capacity and the emergence of other crafts that were not directly related to food production. This paper provides a complete definition of the key concepts, suggest a few alternatives which people can apply on their daily lives, and relate them to the framework that rules sustainability. The main arguments for this work are that citizens in the developed world can reduce the pressure being placed on the state of the environment and contribute to sustainable development by saving energy and water, reducing waste, and choosing a transportation which emits less pollutants.

Keywords waste management; water management; solar energy; transportation alternatives; sustainable practices.

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1 Introduction

Once humanity has become aware that natural resources were limited and the possibility resources depletion was real, the key concept of a “Sustainable Development” emerged and can be defined, according to the Dictionary of Environment and Sustainable Development (Gilpin, 1997), as a “development that provides economic, social and environmental benefits in long term, taking into account the current needs and future generations, and requires: greater emphasis on conservation of natural resources and the basic systems on which all development depends; greater consideration to social equity in national and international context, with particular focus on the poorest countries; a planning horizon that exceeds the needs and aspirations of the present generation”.

Another important point that has been frequently discussed issue in society is the concept of Environmental Sustainability (ES) that involves a connection between social, environmental and economic aspects. ES can be defined as the ability to survive by assimilating waste, providing food and supplying natural resources in an attempt to build and develop in a sustainable manner, without exhausting all natural resources for the present and future generations (UNEP, 2006). For this, it is of utmost importance that government actions in each country and private companies set limits on the use of natural sources and clarify the real needs that people have, both in developed countries and in developing countries (OECD, 2010)

For the world to achieve a sufficient level of sustainability, a better understanding of the current state of the environment needs to be determined. Governments and companies around the world have been trying to reduce human impacts upon the environment, such as through conservation laws and environmental protection projects (Miller and Bentley, 2012). However, society often overlooks that to achieve a sustainable environment, individuals must start changing their behaviours and lifestyle, evaluating what is really needed to be consumed (Nováček, 2013).

The lifestyles of individuals need to be highly evaluated. Each person has their own customs and values, many of which hinder the process to achieve a sustainable environment (Miller and Bentley, 2012). This essay will provide four sustainable alternatives (waste management, water management, energy use and transportation alternatives) in the developed world that citizens can use to reduce impacts upon the environment, and demonstrate that individual changes in our lifestyle can build a more sustainable environment and sustainable development.

2 Discussion

To discuss in a deep way the steps for sustainable development, it is necessary to be aware of other key concepts' definitions related to it, as follows:

Lifestyle

"A style or way of living (associated with an individual person, a society, etc.) ... the characteristic manner in which a person lives (or chooses to live) his or her life." (Oxford English Dictionary, 2014).

Pressure

"Pressures are the activities and processes, which act on the environment and bring about environmental change. They are often classified into root causes and driving forces such as population growth and industrial expansion, emission levels of pollutants, consumption or poverty." (UNEP, 2004).

State of the environment

"The State refers to the condition of the environment resulting from pressures; for example, the level of air pollution, land degradation or deforestation." (UNEP, 2004).

These key concepts are intrinsically related to a framework which moulds sustainable practices – the Pressure-State-Impact-Response (DPSIR) framework (Tscherning et al., 2012).

2.1 The DPSIR framework

Drivers, pressures, state of the environment, impacts and responses (DPSIR) is a tool to assess and manage environmental problems. It is used to assist decision makers in different environmental aspects, to track environmental indicators, to focus on identifying environmental problems and create policies in an attempt to build an environment that is sustainable (UNEP, 2006). It was developed by Anthony Friend in the 1970s, and subsequently adapted by the Organization for Economic Cooperation and Development's (OECD) State of the Environment group. Currently, it has been used widely to correlate human pressures/attitudes upon the environment with the state of the planet by United Nations and European Environmental Agency (UNEP, 2006).

According to (OECD, 2010), the DPSIR framework has five concepts. They are underpinned by the following values:

- **Drivers:** forces that the correlation between socio, economic and cultural issues forces drive human attitudes;
- **Pressures:** all the negative influence and stress that human activities place on the environment that we want to mitigate;
- **State:** is related with environment conditions (water, atmosphere, land and biodiversity), involving all the human concerns upon the environment;
- **Impacts:** it involves the effects of the environmental degradation, and changes in environmental since the human interferences;
- **Responses:** refers to actions taken by society and government to prevent the environmental situation, by controlling drivers or pressures through regulation and maintaining the state of the environment.

2.2 Sustainable waste management

Waste is one of the main concerns when it comes to people's lifestyle, and it can be measured by the Ecological Footprint, defined as the "impact of human activities measured in terms of the area of biologically productive land and water required to produce the goods consumed and to assimilate the wastes generated" (WWF, n.d.). The concern with solid waste is universal and the problem of solid waste has been deteriorating in most countries due to population growth and a pronounced urban growth (Kindred Association, 1994). Drivers of this problem could be considered as: the evolution of human customs, creating or changing habits (increased consumption), improvement of life, industrial development, and new methods of packaging consumer products. All of them have placed pressures upon the environment (Kindred Association, 1994).

Besides the consequences for community health, the impact that improper disposal of the waste causes the soil, atmosphere, vegetation and water resources should also be considered (Association of Municipal Engineers, 1991). The majority of the human waste goes to landfill or is incinerated, which is a large contributor for land, air and water pollution. As a response, the human population should start to promote recyclable collections at home (Kindred Association, 1994).

A selective collection is a system of collecting recyclable materials, such as: paper, plastic, glass, metals and organic, pre-sorted at source and that can be reused or recycled. Selective collection also functions as a process of environmental education in that it sensitizes the community about the problems of wasting natural resources and the pollution caused by this waste (Dhir et al., 2003).

One way for individuals to contribute is to focus on practicing the 3Rs: reduce, reuse and recycle (Kindred Association, 1994). Reduce: avoiding the production of waste, with a review of their spending habits. Reuse: existing materials for another function. Recycle: to treat things that have already been used so that they can be used again (Oxford English Dictionary on-line, 2014). According to (Kindred Association, 1994), the practice of 3Rs contributes to the improvement of the environment, such as: decreasing the exploitation of natural resources, decreasing waste production, reduction of soil, water and air pollution, extends the life of landfills and also creates opportunity to strengthen community organizations.

Moreover, people can also adopt many practices from the Voluntary Simplicity Movement, which can be understood as a varied social movement constituted by people who do not have a consumerist lifestyle and who believe that humanity can have a higher quality of life living with sustainable alternatives (Grisby, 2004; Alexander, 2009; as cited in Ussher and Alexander 2012). According to these authors, there are sustainable alternatives that people can adopt, such as:

- Reducing their overall consumption of material possessions;

- Fix broken items or mend torn clothes instead of just replacing them with new ones;
- Use green bags when shopping instead of relying on plastic;
- Buy second hand clothing;
- Lobby and vote governments to make environment changes laws/policies;
- Recycle their food waste into worm farms, compost bins to make their own fertilizer and;
- Donate old clothes/toys that are still in good condition to charity.

2.3 Sustainable water management

Water management is a big issue in both developed and developing countries. The scarcity and deficient treatment constantly affects society. Humans are feeling the adverse effects of poor water management in many aspects of their lives. This may include the requirement of water restrictions in areas of drought (Asano & Jimenez, 2008). The impacts that the human population have been placing on the state of the environment related with the use of water are: water scarcity, worse especially in countries where the water distribution is not efficient; the reduction of biodiversity, due to the lack or scarcity of this natural resource (Asano and Jimenez, 2008). There are many species, especially amphibians, which are sensitive to humidity and end up not supporting this type of biotic stress (Habel and Zachos, 2011).

Although the management of water resources is a challenging issue, there are simple individual responses that can mitigate the environment situation, such as: water reusability in the home, using water tanks that can be installed into individual's home – to be used for flushing the toilet and watering the garden. In addition, taking shorter showers and washing the car on the grass not concrete, sweeping instead of hosing away dirt (Asano and Jimenez, 2008). As the population grows every day, rationing and the recycling of water become increasingly necessary to preserve fresh water, protect the environment, and to increase water quality standards (Asano and Jimenez, 2008).

A successful sustainable project was developed in the city of Rouse Hill, New South Wales, where the water is recycled for residential uses, such as: for toilet flushing, garden irrigation and washing automobiles. This project was implemented in August 2001 and currently provides recycled water to more than 15,000 residences (Habel and Zachos, 2011). The efficiency of this recycled water supply system is dependent on the quality of the plumbing installed in homes. Thus, the sustainable role of residents is to invest in good equipment to provide greater uptake and use of recycled water, thus avoiding the need to use freshwater (Habel and Zachos, 2011).

2.4 Sustainable energy use – solar energy

Energy production is considered as a key tool for economic growth and of utmost importance for the realization of human needs, such as web browsing, domestic activities, refrigeration, etc. There is a strong relationship between pollution and energy production, where increasing pollution increases with energy production. The factors responsible for the increased production of energy are mainly population growth (overpopulation), which causes the increase of energy demand to meet the needs of the world population, economic aspects and technological developments (Kalogirou, 2004).

The attempt to achieve greater energy production is placing on the environment many negative impacts, such as: destruction of forests, air pollution, ozone depletion, etc. These impacts are dangerous due to high level of toxic gas release to the atmosphere (CO₂, NO, NO₂, SO₂, O₃ and CFCs) and their effects, such as global warming (Kalogirou, 2004).

Renewable energy sources use raw and infinite materials for energy production. These natural sources that include solar energy have been increasingly used by developed countries (Landa, 1975). Solar is an energy source that is carbon intensive in the initial construction phase but thereafter, can supply large amounts of

energy with zero emissions. A transition to this and other renewable energy sources is pivotal to prevent and mitigate environmental degradation (Kalogirou, 2004).

Changes can be made on an individual level, through the use of panels for collecting solar energy. As a result, people are decreasing the demand for fossil fuels and the emissions that are produced when used as energy (Walker, 2013). Although this method of renewable energy is expensive due to the purchasing and installation of equipment, future energy bills will be cheaper and all the investment will be offset (Walker, 2013).

2.5 Transportation alternatives

Climate change has been a highly discussed and concerning issue in different areas, such as science, politics, economics, health and especially in relation to the environment (Hocking and Kroksmark, 2013). There is scientific consensus in the climate change debate with many scientists agreeing that humans are contributing significantly to climate change. These “deniers” believe climate change to be a natural phenomenon that is not influenced by emissions created by humans (Hocking and Kroksmark, 2013). The only reason there is controversy is because the “climate change deniers” are given too much media time and their views seem to be used continuously to “balance” the debate (Hocking and Kroksmark, 2013).

According to Kennedy et al. (2009), the world's urban population exceeded 50% and the total greenhouse gas emissions between the cities analysed in the study range from 4.2 and 21.5 t CO₂/cap. These values vary according to the population size of each city, the demand for energy, and accessibility of people to transport. The greater affordability of their own means of transport and dependence on non-renewable energy use for the operation of vehicles contributes greatly the percentage of greenhouse gas emissions (Kennedy et al., 2009).

The impacts and pressures that the increase of greenhouse gases on the state of the environment is huge, such as: melting ice caps causing the loss of local biodiversity, respiratory diseases due to air toxicity, increased rate of fires which cause habitat loss etc. What is worrying is that few individual actions can be taken in regards to reducing greenhouse gas emissions through transport (Kennedy et al., 2009). This is because most of the responses are developed by businesses and the city governments. Individual changes such as: the use of public transport or bicycle use for different personal goals (work, school, leisure activities), carpooling and sharing and limiting the number of cars per family must be adopted by all society in an attempt to reduce human's impacts upon the environment (Kennedy et al., 2009).

Furthermore, depending on the city, public transport can be faster than cars and people can also save money with car maintenance and parking when using this kind of transport (Living Greener, 2014)

3 Conclusion

The issues surrounding the individual's changes in their lifestyle have a large importance for a sustainable development. The four possible changes to be adopted include sustainable waste management, sustainable water management, sustainable energy use and transportation alternatives are well related to the DPSIR framework, each one in its social, economic and environmental context. Through a better understanding of this simple practice, it is expected that people acquire a better conscience of the state of the environment and they will adopt the principles of sustainability, in order to reduce the pressures and impacts on the environment. Governmental actions in the context of sustainable energy use must be taken in order to encourage more households to adopt the method of solar energy, such as the decrease in the price of equipment for the use of solar energy through subsidies and other incentives. Regarding to sustainable waste management and sustainable water management, more voluntary campaigns should be developed, so that the population becomes increasingly active and involved in building a sustainable world.

Finally, the shift to a more sustainable model of development requires responsibility, ethics and commitment. Despite the social, economic and environmental differences vary from country to country, all should move together for the same cause. Each nation will have to define its own strategy for change. However, all should reach a consensus on the basic concept of sustainable development, since this should be a global target, faced together by all nations. For these objectives to be achieved, it is necessary a transition to a new economic system where there is a harmonious relationship between production and consumption within and across all countries.

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References

- Asano T, Jimenez Cisneros BE. 2008. *Water Reuse: An International Survey of Current Practice Issues and Needs*. IWA Publishing, London, UK
- Association of Municipal Engineers. 1991. *Recycling Household Waste: The Way Ahead*. Telford, London, UK
- Dhir RK, Newlands MD, Halliday J. 2003. *Recycling and Reuse of Waste Materials*. Thomas Telford Limited, London, UK
- Gilpin A. 1997. *Dictionary of Environment and Sustainable Development*. John Wiley, Chichester, USA
- Habel JC, Zachos FE. 2011. *Biodiversity Hotspots: Distribution and Protection of Conservation Priority Areas*. New York, Berlin, Springer
- Hocking C, Kroksmark U. 2013. Sustainable occupational responses to climate change through lifestyle choices. *Scandinavian Journal of Occupational Therapy*, 20: 111-117
- Tscherning K, Helming K, Krippner B, Siever S, Paloma SG. 2012. Does research applying the DPSIR framework support decision making? *Land Use Policy*, 29: 102-110
- Kalogirou SA. 2004. Environmental benefits of domestic solar energy systems. *Energy Conversion and Management*, 45(18): 3075-3092
- Kennedy C, Steinberger J, Gasson B, Hansen Y, et al. 2009. Greenhouse gas emissions from global cities. *Environmental Science and Technology*, 43(19): 7297
- Kindred Association. 1994. *A Practical Recycling Handbook*. Thomas Telford Ltd, London, UK
- Landa HC. 1975. *The Solar Energy Handbook: A Practical Engineering Approach to The Application of Solar Energy to The Needs of Man and Environment, Including Section on Terrestrial Cooling and Wind Power*. Milwaukee, USA
- Living Greener. 2014. 'Motor Transport'. Australian Government. <http://www.livinggreener.gov.au/travel/car-alternatives/public-transport>
- Miller E, Bentley K. 2012. Leading a sustainable lifestyle in a 'Non Sustainable World': Reflections from Australian ecovillage and suburban residents. *Journal of Education for Sustainable Development*, 6(1): 137-147
- Nováček P. 2013. Human Values Compatible with Sustainable Development. *Journal of Human Values*, 1991: 5-13
- OECD. 2010. *Perspectives on Global Development: Shifting Wealth*, OECD, Paris, France

- Oxford English Dictionary Online. 2014. Noun definition 1.<http://www.oed.com.libraryproxy.griffith.edu.au/view/Entry/108129?redirectedFrom=lifestyle>
- United Nations Environment Programme (UNEP). 2004. Guidelines for National Integrated Environmental Assessment Report. http://www.unep.org/dewa/africa/docs/en/NIEAR_GuidelinesRevised_26Nov04_en.pdf
- United Nations Environment Programme (UNEP). 2006. Africa Environment Outlook - 2: Our Environment, Our Wealth, United Nations Environment Programme, Nairobi, Kenya
- Ussher S, Alexander S. 2012. The voluntary simplicity movement: A multi-national survey analysis in theoretical context. *Journal of Consumer Culture*, 12(1): 66-86
- Walker A. 2013. *Solar Energy: Technologies and Project Delivery for Buildings*. RSMears, Hoboken, USA
- WWF. Ecological Footprint. http://wwf.panda.org/about_our_earth/teacher_resources/webfieldtrips/ecological_balance/eco_footprint/