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Eco-Friendly Houses: Green Future Ahead

Kamaljeet K Sekhon Randhawa*

Section of Genetics & Microbiology, Department of Plant and Environmental Sciences, University of Copenhagen, Thorvaldsensvej 40, Frederiksberg, DK – 1871, Denmark

***Corresponding author:** Kamaljeet K Sekhon Randhawa, Section of Genetics & Microbiology, Department of Plant and Environmental Sciences, University of Copenhagen, Thorvaldsensvej 40, Frederiksberg, DK – 1871, Denmark, Tel: 45 35333560; E-mail: kamalsekhon80@yahoo.com

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Introduction

"April 2014 average CO_2 value was 401.33 ppm in air, the first monthly average over 400 ppm in human history" – tweeted the Scripps Institution of Oceanography in San Diego, US on 1 May 2014. The tweet was indeed alarming as the 400 parts per million (ppm) CO_2 level in air was exceeded for the very first time in 800,000 years. The constant rise in the levels of greenhouse gases viz. CO_2, CH_4, N_2O, O_3 and CFCs has led to global warming and many other environmental adversities necessitating immediate mitigation of climate change. It is observed that the last decade between years 2000-2010 caused more damage than any of the previous eras. This decade led to the rise of 0.850C of combined ocean and land temperature, rising sea levels, diminishing snow and ice sheets, shrinking glaciers, shifting seasons, ocean acidification and affecting food productivity.

Climate change is not a problem of a community, country or continent, it's a global problem, it affects us all and we all have to gear up and play our part in saving our planet. It is estimated that the way our climate is changing 1/4th of earth's species and wildlife are heading for extinction by 2050 (The Nature Conservancy). But who is responsible for this change? – We, the humans and our activities are changing the natural greenhouse. During the last century or so the burning of fossil fuels like coal, oil and natural gases has contributed to the increased level of atmospheric CO_2. The burning of these non-renewable natural resources releases carbon that combines with O_2 in the air to make CO_2. Clearing of land for agriculture (deforestation), industrial development, urbanization and anthropogenic activities have all contributed to the rising temperatures and increasing greenhouse gas emissions. Higher temperatures are giving rise to increased risk of dry conditions, drought, wild fires, floods, stronger storms, more diseases and many other economic losses. The Intergovernmental Panel on Climate Change (IPCC) concluded that there is a more than 90% probability that human activities have warmed our planet, and contributed to the rise in atmospheric CO_2 levels from 280 ppm to 379 ppm in the last 150 years.

The question that arises is - Do we have a solution for this frightening climate change? And fortunately the answer is - Yes. But we have to be resilient and avert any further damages to the environment and each one of us has to contribute at individual level. Carbon emissions by the agriculture, transport, building and construction sectors have to be regulated. Government leaders, policymakers, investors and concerned citizens must come forward. Reducing the carbon emissions by afforestation, sustainable agriculture, low carbon emitting vehicles or electric cars, eating less red meat, making your houses energy efficient, buying energy efficient appliances, recycling and re-using are some solutions suggested by the environment experts for alleviating climate change.

The notion of energy efficient or eco-friendly houses is not new in the developed countries. According to the American Council for an Energy Efficient Economy's (ACEEE) list or scoreboard of most energy efficient countries published in 2012, UK ranked number one followed by Germany, Italy, Japan and France. USA was at number 9 position. As these big economies are still not as energy efficient as they should be the countries which did not make it to the list at all have to come a long way. The 'Code for Sustainable Homes', officially launched by the UK government in 2006, for sustainable home building is a commendable step in the direction of energy efficient houses and buildings. The Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) are also catching up with the sustainable homes concept. The sustainability benchmarks by which these eco-friendly homes are measured are based on several parameters:

- Water conservation: rainwater harvesting, re-cycling and re-using for gardening, washing cars, flushing toilets, washing machines, bio-cleaning or self-cleaning windows.
- Waste-reduce recycle and reuse: sorting of recyclable waste and organic waste.
- Pollution control to stop global warming: an air-source heat pump, triple-glazed windows, insulating the walls both internally and externally, insulating the ceiling and floor, green roofs for the cooling effect.
- Energy generation, conservation and reducing CO_2 emissions: Solar thermal panels for water heating, solar photovoltaic systems for generating electricity, motion-sensitive or energy-saving lighting system, under floor heating, provision of good daylight quality.

These exemplary houses equipped with the green essentials are not a dream. These 'self-sufficient' homes may generate more energy than they consume. They work on sustainable architecture, sustainable material and sustainable landscaping models. Some of the sustainability benchmarks mentioned above can also be introduced in the already built houses – the concept of 'eco-retrofitted houses' is growing up fast. It is no more a tantalizing prospect. It is attainable by refurbishing the house with the eco-friendly set-up.

However, building 500 or 5,000 such houses in a country will not bring the change. The mounting of the solar panels driven by governmental incentives will make it feasible for a middle-class household to invest in such energy generation strategies. The energy generated by a 100-watt solar panel depends on how much sunlight it is receiving. A larger solar panel will automatically generate more power, and might even supply all the energy needed for a household over a year. For example: in a country like India, with 300 clear sunny days in a year, if each house installs a few photovoltaic or solar panels on the rooftop it can have a major impact on India's CO_2 emissions and will do good to the environment in a big way!

It is encouraging to see that a number of governments, businesses like IKEA and Apple and policymakers are working towards bringing down the carbon footprints. It's high time; each one of us must contribute and work towards the effective, affordable and sustainable solutions to curb the climate change. In Abu Dhabi desert, one of the biggest concentrated solar plants in the world; the Shams Solar Power Plant has been set up. In this power plant a 250 hectare solar complex is generating 100 MW of electricity which is supplied to 20,000 households. Recently, expressing that the momentum to confront climate change is building and showing his happiness during his visit to the Shams Solar Power Plant in Abu Dhabi, Ban Ki-Moon, UN Secretary General said – "Everything is at stake. We may not get a second chance. The more we delay, the more we will pay".

We must act today to leave a greener and healthier environment for generations to come!