An innovative concept leveraging mass volunteerism and the viral nature of the Web to substantially reduce global carbon emissions

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Abstract

Global warming and climate change pose one of the most serious challenges that humanity has ever confronted. But there has been a limited concerted response to this challenge of global warming and climate change and the response has been primarily through the vehicles of the Kyoto Protocol and the Voluntary Carbon Markets. While the Kyoto Protocol is focused on nations and voluntary carbon markets are driven by corporations, there has been one fundamental missing link in this equation: people, the 6.5 billion people who inhabit this earth. These individuals account for more than 50% of all greenhouse gas emissions. Clearly there is a leadership vacuum when it comes to educating and mobilizing the masses to substantially impact climate change. It is the opinion of the authors that this must be rectified, and a vision is offered herein.

The authors present an innovative concept of Volunteer Carbon Credits (VCCs) and utilize this concept for leveraging mass volunteerism and the viral nature of the web to demonstrate a platform for substantially impacting global carbon emissions. Specifically, they present the case study of Okemos High School, Michigan, USA which is the first high school in the world that has pledged to go carbon-neutral.

Keywords: global warming, climate change, volunteer carbon credits.

1 Introduction

Global warming and climate change pose one of the most serious challenges that humanity has ever confronted. Today, the atmospheric concentration of carbon
dioxide has risen to 380 parts per million (ppm) due to anthropogenic emissions from burning fossil fuels and the loss of natural carbon sinks such as natural vegetation. This is in stark contrast to the carbon dioxide levels of 280 ppm prior to the industrial revolution of the 18th century. Most scientists agree that 7 billion tons of carbon dioxide must be prevented from entering the atmosphere (for) during the next 50 years in order to stabilize the carbon dioxide levels at 500 ppm, a target that is almost double that of the pre-industrial era [1, 2].

The clear and imminent danger to the planet was further reinforced by the 2007 report of the United Nations sponsored Intergovernmental Panel on Climate Change (IPCC). After reviewing thousands of peer-reviewed scientific studies pertaining to the impact of climate change, an august group of climate experts unanimously concluded that global warming is real and “unequivocal”. They further concluded that there is strong evidence that the increase in temperature since 1950 can be directly attributed to man-made greenhouse gas (GHG) emissions. The scientists also highlighted the fact that without a dramatic reduction in carbon dioxide emissions by 2012, climate change may bring about “abrupt or irreversible” effects on air quality, oceans, glaciers, coastlines, agriculture and a variety of species. The gravity of the problem can be appreciated if one examines only a few facts:

- The Greenland Icecap Is Melting Faster Than Predicted
- Greenland And THE West Antarctic Ice Sheet Melt Would Result In A 20+ Foot Rise In Sea Levels
- Substantial Rise In Sea Levels Will Result In More Than 600 Million Refugees In Coastal Regions

There has been a limited concerted response to this challenge of global warming and climate change primarily through the vehicles of the Kyoto Protocol and the Voluntary Carbon Markets. The Kyoto Protocol, which is an international treaty linked to the United Nations Framework Convention on Climate Change, committed 36 developed and industrialized countries to reduce their collective GHGs by 5.4% below 1990 levels by 2012. The Kyoto Protocol provides three major flexibility mechanisms which form the basis for the regulated international compliance carbon market based on the cap-and-trade scheme. These are, emissions trading between countries with emissions targets; purchasing carbon credits (Emission Reduction Units (ERUs)) from GHG reduction projects implemented in another developed country or an economy in transition; and finally, earning carbon credits (Certified Emissions Reductions (CERs)) by financing Clean Development Mechanism (CDM) projects in developing countries. Typical projects are highly structured, they require substantial upfront investment, and they involve substantial transaction costs and a major investment of time because of compliance and regulatory reasons.

Recognizing the absence of a much larger global focus on making a dent in the metaphorical GHG emissions pie [3] several institutions and companies (and some individuals) have taken it upon themselves to act as responsible citizens of the world and make voluntary commitments to reduce their contributions to climate change by offsetting their carbon dioxide emissions. This initiative has led to the evolution of the voluntary carbon markets. Since the voluntary carbon
market is not driven by legally mandated regulatory oversight, the market is highly fragmented and lacks uniformity, transparency and certification. However these drawbacks are offset by innovation, flexibility and lower transaction costs. The voluntary carbon market is relatively small accounting for approximately 100 million tons of carbon dioxide in 2007 [4].

2 An innovative concept: volunteer carbon credits

While the Kyoto Protocol is focused on nations and voluntary carbon markets are driven by corporations, there has been one fundamental missing link in this equation: people, the 6.5 billion people who inhabit this earth. These individuals account for more than 50% of all greenhouse gas emissions. Clearly there is a leadership vacuum when it comes to educating and mobilizing the masses to substantially impact climate change. With this purpose in mind, the authors have developed an innovative concept of volunteer carbon credits, which are earned through volunteer action via behavioral change and contributions to green projects. These credits can then be applied to offset the carbon emissions of a volunteer’s favorite institution, typically referred to as the carbon footprint. This concept empowers individuals and fosters behavioral change at the grassroots level. Human beings, as social animals belong to several groups and they are passionate about their schools, colleges, universities, churches, and companies. The volunteer carbon credit concept unleashes the passion that people have for their groups, teams, and institutions in order to make a significant impact on global climate change. 6.5 billion people: 1 person at a time. The great thing about leveraging institutions and the goodwill people have towards them is that they serve as a community rallying point. This innovative concept has the potential to mobilize millions of people at zero cost and is ideally suited for massively growing emerging economies and also developed economies as well.

Given the enormous scope of this target and the relative lack of global action the authors propose mass education of individuals and mass volunteerism of individuals who are responsible for almost 50% of the GHG emissions. This paper presents an innovative concept and a framework for leveraging mass volunteerism and the viral nature of the web to substantially impact global carbon emissions. This framework educates individuals and provides incentives to make lifestyle choices and contribute to GHG reduction projects. The authors introduce a pioneering concept of Volunteer Carbon Credits (VCCs), which are earned through volunteer action and in turn employed as credits to make carbon neutral the volunteers’ favorite institutions such as, schools, colleges, churches, and clubs. The authors are convinced that this innovative concept could mobilize large masses of individuals and provide data for real-life case studies.

Specifically, the authors present the case study of Okemos High School, Okemos, Michigan, USA which is the first high school in the world that has pledged to go carbon-neutral. In order to achieve this very ambitious goal the school embarked on an internal sustainability initiative, partnered with businesses and employed volunteerism to make lifestyle changes, launch CFL adoption drives, plant trees and provide solar ovens to Tanzania.
3 Case study: Okemos high school pledges to go carbon neutral

Okemos High School launched its Alternative Energy and Sustainability program and pledged to become the first high school in the world to go carbon neutral. Given the enormous challenge of global warming and climate change, Dr. John Lanzetta, Principal; Okemos High School said “This program has been conceived by the students with a very ambitious and noble goal of making Okemos High School the first carbon neutral high school in the world. The program aspires to attain this through energy efficiency, offsets through mass volunteerism and global outreach programs.”

A multi-pronged approach was adopted to start the ambitious journey towards making Okemos High School the first “carbon neutral” high school in the world:

- Provide Leadership
  - Empower The Individual
  - Educate/Raise Energy Awareness
  - Involve Students in Community/Global Outreach Programs
  - Foster Mass Volunteerism and Community Awareness
  - Propagate Behavior Change Using Grassroots Level Mechanisms
  - Assess Carbon Footprint
  - Reduce Carbon Footprint Through Energy Conservation
  - Offset Carbon Footprint Using Volunteer Carbon Credits
  - Capitalize On The Innovative Concept of Volunteer Carbon Credits By Leveraging The Viral Nature of the Web

Education and green awareness was created using a variety of approaches: door to door drives, inviting speakers to create energy awareness, organizing fairs for sustainability and alternative energy technologies and exploring options with the National Energy Education Development Project. Students were also involved in exploring demonstrator projects, energy conservation/recycling, fun activities like solar cookout and windmill design and home energy conservation projects.

The carbon footprint of the school was assessed and energy conservation programs employed to reduce the footprint within budgetary constraints. In order to offset the carbon footprint of the school by capitalizing on the innovative concept of volunteer carbon credits by leveraging the viral nature of the web, a new website (www.carbonneutralvolunteers.org) was established.

This website enables individuals to earn Volunteer Carbon Credits through volunteer action by making

- Pledges for Behavioral Change
- Contributions for Green Projects.

Pledges for behavioral and personal lifestyle choices are listed in Figure 2.

For each pledge an estimate of the Volunteer Carbon Credits earned is displayed as shown in Figure 2. For example, an individual pledging to replace a dozen incandescent bulbs with Compact Fluorescent Lamps will earn 1200 Volunteer Carbon Credits, which represent 1200 pounds of carbon dioxide.
Figure 1: Home page of carbon neutral volunteers.

Figure 2: Personal lifestyle choices.
default units for Volunteer Carbon Credits are pounds of carbon dioxide versus tons of carbon dioxide that are used in Voluntary carbon markets and the Kyoto protocol. This is primarily due to the scale of each individual action as compared to the emissions of a country or a company.

The website also offers individuals an option to make contributions to green projects including solar ovens in Tanzania, planting trees and Okemos High School projects as shown in Figure 3.

For example, by contributing to a solar oven for deployment in Tanzania an individual earns 4000 Volunteer Carbon Credits as shown in Figure 4.

These credits accrue due to the impact of the solar ovens on climate change by reducing the destruction of trees, the burning of fossil fuels and the related soil degradation.

Figure 5 shows the plant based fossil fuels utilized in Morogoro and the related soil degradation. In addition to making an impact on climate change contributions to the solar oven project have a significant social impact. The Solar Oven program initiated in Morogoro, Tanzania is focused on designing and building solar ovens indigenously. This work is being undertaken in close collaboration with Sokoine University of Agriculture and the Vocational Education and Training Authority (VETA). This project will make a significant impact on the quality of life of the villagers, particularly women and children.

Impact assessment studies are planned for two pilot villages in Dodoma region of Tanzania to evaluate the social, economic, environmental and health impact of the solar ovens.
The Volunteer Carbon Credits earned by individuals through these volunteer actions are then employed as credits to offset the carbon footprint of Okemos High School. The success of this program demonstrates the viability of
Volunteer Carbon Credits to make a significant impact on climate change. These concepts can be readily extended towards mobilizing zero cost volunteer carbon credits in massive growing economies and also towards mining hidden assets of corporations and institutions.

4 Concluding remarks

The authors have developed an innovative concept of Volunteer Carbon Credits (VCCs) and utilized this concept for leveraging mass volunteerism and the viral nature of the web to demonstrate a platform for substantially reducing global carbon emissions. Specifically, the authors have presented the case study of Okemos High School, Okemos, Michigan, USA which is the first high school in the world that has pledged to go carbon-neutral. In order to achieve this very ambitious goal the school embarked on an internal sustainability initiative, partnered with businesses and employed volunteerism to make lifestyle changes, launch CFL adoption drives, plant trees and provide solar ovens to Tanzania. The authors would like to capitalize on this success to challenge high schools and other institutions globally to adopt the Volunteer Carbon Credit concepts and principles highlighted herein to make a substantial impact on global carbon emissions.
Figure 7: An all volunteer team.

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References