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Green Credits

A Unique and Innovative Program for Governments to
Reduce the Carbon Emissions of Individuals and Business

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Zerofootprint is an organization dedicated to a mass reduction in global environmental impact. We provide software and services to individuals, governments, universities, and corporations that measures and manages carbon footprint and engages employees and citizens worldwide in combating climate change.

Green Credits

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Executive Summary

Governments everywhere face the challenge of how to engage their citizens in a program of carbon emissions reductions. There have been two main approaches so far – carbon taxes and personal carbon quotas. We propose Green Credits, an alternative which is based on rewarding citizens after they have taken actions to reduce their emissions. Green Credits are based on consumer loyalty reward schemes – a simple, proven and widely accepted model.

Citizens are awarded Green Credits for every verifiable action that they take to reduce their carbon emissions.

Green Credits become the single currency for all green initiatives. They replace existing programs of grants and subsidies for carbon reductions, and reward new forms of action. Government uses existing budgets for carbon reduction programs, plus the savings on energy infrastructure investment that follows from the reductions, to fund Green Credits.

Citizens redeem their Green Credits as cash rebates or tax deductions.

This simple reward scheme for environmental action will be affordable and easy for citizens to understand and engage with.

Green Credits offer government an innovative and effective way of reducing carbon emissions, and bringing about the social change necessary to tackle climate change.



Introduction

The world is facing an environmental crisis. Global warming threatens to alter climate patterns, with enormous human and economic consequences. Meanwhile, there is increasing competition for natural resources, particularly fertile land, water and food, not to mention the growing problems of waste and ecological degradation.

All governments face these problems to varying degrees. Often the issues are interlinked, with climate change driving the others. Reducing carbon emissions – the primary cause of global warming – is, therefore, a priority. A certain amount can be achieved through regulation, or with cap-and-trade schemes for corporates and other large emitters. A recent report from the London School of Economics written by Nicholas Stern (Key Elements of a Global Deal on Climate Change) makes clear that to avoid runaway global warming, carbon emissions globally must average no more than 2 tonnes per person by 2050. With per person emissions in developed countries currently averaging 10-25 tonnes, it is clear that this target cannot be reached without the widespread engagement of individuals and businesses.

But how best to engage individuals and smaller businesses in bringing about carbon reductions is a matter of considerable debate and uncertainty. A number of schemes have been put forward, most notably personal carbon quotas and carbon taxes, and various governments have been investigating or implementing these with varying degrees of success. For example, a recently imposed tax on fuel in British Columbia is unpopular and considered unfair. Meanwhile, the UK Government estimates that it would cost £1-2 billion and take up to eight years to set up a personal carbon quota scheme for the country, with annual running costs of another £1-2 billion.

We believe there is an innovative alternative to these approaches that could more successfully engage people in the huge cultural and behavioural shift that is necessary to combat global warming. It is based on the well-understood notion of consumer reward schemes, and creates clear and positive incentives for change. And it is funded by the savings that come from reducing energy demand and the need to build new infrastructure.



Because of the urgency of the climate change problem, we will present the idea in terms of helping to reduce carbon emissions. (Carbon is shorthand for greenhouse gases which are usually converted to a carbon dioxide equivalent.) However, this approach could equally address ecological system degradation, water usage and other environmental problems.

Green Credits

The new approach, which we call *Green Credits*, is based on the popular mechanism of consumer reward schemes, such as frequent flyer miles. But where retail schemes reward people the more they fly or shop, in our scheme government rewards citizens the more they reduce their environmental footprint. And it makes the reward in the form of Green Credits, which have a clear cash or tax-deductible value.

Government awards Green Credits for verifiable actions that reduce carbon emissions, such as reducing electricity or heating fuel consumption, increasing home insulation, installing a renewable energy heating source, switching to a hybrid vehicle, etc. For example, if someone reduces their electricity consumption by 100 kilowatt/hours (kWhs), or their heating oil consumption by 100 litres, government might award them 100 Green Credits. At the end of the year, the citizen or business either banks its credits, or redeems them as a tax benefit or cash reward, whichever is most suitable.

Government could choose to value Green Credits in some way other than a cash rebate or tax deductions. There are certain advantages in using tax deductions in terms of encouraging social change – see *Green Credits Trading*, below, for more information. The key point is that the value of a Green Credit should be real, clear and easy to understand. (For the purposes of this paper we will consider cash or tax deductions only.)

Government, meanwhile, funds Green Credits from its existing budget for carbon reduction programs or other greening initiatives, and the future savings it will enjoy from a lower carbon economy (for example, from not having to build new power stations and energy infrastructure as a result of reduced demand). A key element of the scheme is that Green Credits are funded by the benefits that accrue to the country from the accumulated efforts of its citizens in reducing their carbon emissions. There is no extra cost to the taxpayer.

Example Activities	(indicative)Value
Reducing electricity consumption by 1 kW	1 Green Credit
Reducing water consumption by 10 litres	1 Green Credit
Insulating your home	1,000 Green Credits
Installing ground source heating	1,500 Green Credits
Buying a low emission vehicle	3,000 Green Credits

The Reward Scheme Model

A Green Credits scheme is built on individual incentive and reward for verifiable carbon reductions or other initiatives that fit government's green agenda. It is simple to understand – almost everyone is familiar with consumer reward schemes, and many people already carry several reward cards in their wallets. The reward scheme approach is less complex than individual carbon quotas and cap-and-trade mechanisms, and less confusing than the myriad of different incentives that are now common as governments try to encourage personal and business carbon reductions. A Green Credits scheme will also be relatively quick and cheap to implement.

Technology to support reward schemes is readily available, cost-effective and proven. American Airlines, for example, operates its AAdvantage air miles scheme for 63 million members – more people than there are in France.



How It Works

Government sets carbon reduction goals under its climate change policy. For example, it might set a goal of reducing carbon emissions caused by individuals and small businesses by 50 million tonnes over two years. Government then calculates a future value of this reduction in terms of savings it will make in avoided investment in power generation, energy infrastructure and other costs (because the reduction in emissions will primarily come from reduced energy demand). For the purposes of this example, let's assume this infrastructure saving equals \$1 billion. Government then translates this \$1 billion into Green Credits, minus a budget to promote and administer the scheme.

To establish the value of one Green Credit, government looks at what will be required to reduce emissions by 50 million tonnes in terms of savings in electricity, gas and heating oil consumption, reduced road miles, etc., and comes to a workable amount. Let's say it decides that 1 Green Credit should be worth 1 tax dollar.

Government must then define what actions will earn what number of Green Credits. For example, it may decide that a reduction in electricity consumption of 1 kWh earns 1 Green Credit. A reduction in heating oil consumption of 1 litre might earn 2 Green Credits. A reduction in natural gas consumption of 1 cubic meter earns 3 Green Credits, and so on. Some actions could earn batches of credits. For example, switching to a hybrid vehicle could earn 3,000 Green Credits.

The scheme could even extend to things like buying a low emissions car, or locally produced food, etc., all earning Green Credits. The value of credits can change over time as priorities and funding opportunities change. Credits might be increased to encourage the use of new public transport facilities, or to install more efficient toilets, or improve home insulation, etc.

The key point is that, overall, the total of available Green Credits, each representing a reduction in carbon, equals the government's target amount of carbon emission reductions or other green targets (50 million tonnes of carbon in our example), and their monetary value equals the avoided future investment (\$1 billion minus a budget for administration in our example).



Note that all these figures are simply indicative, and feasibility studies will be undertaken to estimate more realistic figures. A Green Credits scheme will require that all values are calculated in a transparent way that uses established carbon values for all fuels and processes.

How Citizens Benefit

Citizens and small and medium sized businesses sign up for Green Credits. (Corporate emissions may be better tackled through a separate cap-and-trade scheme.) Signing up is made easy through a number of different mechanisms, including questions on a tax form, the Green Credits website, mail or visiting a government office. (See *Appendix I – Case studies*.)

It is also important to note that **this is an opt-in scheme**. Citizens and businesses choose to participate, and are given clear and tangible incentives for doing so.

Citizens and businesses opt-in to allow government to collect their electricity, gas and heating oil consumption figures from their utilities. The same could apply for vehicle type and mileage figures from transport authorities, or airline frequent flyer miles and other relevant figures from other organizations.

The citizen's or business' previous 12 months' consumption – in other words, their annual carbon footprint – forms the baseline from which government measures their future potential carbon savings.

At regular intervals, government calculates how much citizens and businesses have saved measured against their baselines, and sends them a statement showing exactly how these savings will convert into Green Credits and their redeemable value in cash or saved tax payments. In this way, individuals and organisations are given regular positive feedback on any carbon reduction initiatives they have taken, and reminded of the incentive to do more – they will earn more cash or save more tax. (To keep the system itself green, the statements are sent electronically wherever possible.)

At the end of the year, government presents citizens and businesses with the total of Green Credits they have earned, and they redeem them as cash or against their tax bills.



The incentive for citizens and businesses to reduce their carbon emissions is clear and tangible – they earn cash or lower their tax bill.

But note that citizens and businesses are rewarded only after they have successfully made verified reductions.

Where the Funding Comes From

Governments often already have schemes to encourage householders and businesses to reduce their energy use. Green Credits can encompass and replace these programs and their budgets, thereby creating a single unified green currency. In addition, government can redirect funds set aside to meet future increased energy demand.

Everywhere, governments are faced with rising energy demands. Most are planning to develop more power generation facilities and other infrastructure. If energy demand is reduced, it will no longer be necessary to develop the added infrastructure. Government can take the budget it has set aside for this purpose and spend it instead on tax cuts or cash benefits for its citizens whose energy reducing actions make the planned infrastructure redundant.

In other words, it is a virtuous circle in which the budget for future infrastructure development funds the Green Credits (cash or tax deductions). And the cash or tax deductions (Green Credits) give citizens and businesses the incentive to reduce energy consumption, which makes future infrastructure development redundant.

Furthermore, since energy generation from non-renewable sources produces carbon, the reduction in energy demand from the Green Credits scheme will help the country reduce its carbon output. This saves money as well as the environment, and is another virtuous circle.

Too Successful

But what if the scheme is 'too successful' – if citizens are so enthusiastic and effective that they make emissions reductions and green their lives beyond government's target?



In the context of climate change, it is impossible to reduce emissions too far. And there are likely to be many added benefits to government of a lower carbon economy. However, unexpectedly large reductions could mean that there are more Green Credits to redeem than government has set a budget for. What can government do to control the budget? One solution is to reduce the value of Green Credits, as airlines sometimes devalue their airmiles to balance their budgets – for example, make it so that 2 Green Credits are required to earn a rebate of 1 tax dollar rather than one as previously.

Alternatively, government could take the view that the extra reductions will translate into savings further into the future, and can monetize this saving by deficit funding – selling the future benefits in the capital markets in the form of green bonds or derivatives (options on bonds, etc.). Using green bonds will insulate the taxpayer from the consequences of a Green Credit scheme overshooting its target, while helping government balance its budget. It will also most likely not lead to a degradation in the government's credit rating since the future liabilities the government will incur by raising debt in this way will be more than offset by a reduction in future infrastructure costs if the credits have been priced properly.

Rewarding the Carbon Lean

Although the majority of citizens and businesses will have energy savings they can make, there will be a minority that have already taken significant steps to reduce their consumption, or who naturally lead green or low carbon lives (who are often the citizens on the lowest incomes). To ensure that those who are already green are not penalized, the scheme could give the 10% of the population with the lowest energy use a one-time award of 5,000 Green Credits, and those in the lowest 11-20% a 2,500 Green Credits award. (Again, the figures are merely indicative.) The lowest 10% and 20% bands will be calculated at the beginning of the scheme, and annually from there on, giving people an added incentive to make significant reductions.

This ensures the scheme is equitable, and that those on low incomes with low emissions are appropriately rewarded.

Beyond Carbon

We have discussed Green Credits primarily in the context of carbon emissions because of the current focus on climate change, but governments everywhere face wider environmental and development issues. Government could use the Green Credit scheme to tackle waste or water usage, to protect or improve threatened ecological systems, and to focus on other priorities which may emerge over time.

In some countries where the primary source of electricity is hydroelectric or nuclear, a reduction in energy use will lead to only a marginal reduction in carbon emissions. Nevertheless, governments in such regions still face infrastructure development expenses as energy demand rises. Government could still use Green Credits schemes to lower demand to help them avoid these future infrastructure expenses.

Auditing

A major advantage of Green Credits is that it rewards people only **after** they have taken a green action – say, a reduction in their energy consumption by 100 kWh, or a cut in their water use of 1,000 litres. And the awards are only given for verifiable reductions, calculated from utility bills, or other auditable means.

When citizens or businesses opt into the scheme they agree to government accessing their utility and other relevant bills. This is a simple and cheap way for government to verify that carbon reductions have been achieved.

With Green Credits, government, unusually, is always one step ahead. It knows that for each credit awarded a measurable verified saving has been achieved.



Quick Wins

We suggest that a Green Credits scheme focuses initially on those areas where it is clear and well understood how citizens and business can make carbon reductions, and where it is cheap and easy to measure and verify the reductions. This will include reducing electricity and heating fuel consumption, car mileage (where there is reporting of mileage with annual roadworthiness testing or insurance policies) or other travel. These quick wins will not only bring significant early reductions in emissions, but also reward people well for their efforts, thereby kindling their interest and support for the scheme, and helping establish its credibility.

It should be noted that the areas where it will be quick and easy to introduce Green Credits are also those areas that make up the major part of an individual or business's footprint – electricity use, heating and travel.

A New Currency of Green

One of the problems with governments trying to take effective steps to reduce carbon or make other environmental improvements is that initiatives tend to proliferate, and are often spread across departments, with little consistency or coordination. The UK Government, for example, has around 90 policies that relate to individual carbon usage spread over several ministries. This overwhelming diversity of initiatives can dissipate effort, increase costs and lead to confusion among those at whom the policies are aimed.

A Green Credits scheme could enable government to centralize its programs and standardize its green action incentives for citizens and businesses. Instead of a complex and confusing array of subsidies, tax breaks or grants, there would be a single simple Green Credits scheme. If someone reduces their electricity consumption, they earn Green Credits. If they install geothermal heating, they earn Green Credits. If a business trades in its SUV fleet for hybrid cars, it earns Green Credits.

Such a scheme is clear and simple, and everyone understands where they go to claim their reward for their green initiatives.



Green Credits, therefore, become the unifying currency of environmental action. They are what citizens and businesses earn if they act green, and their value is clear and visible – Green Credits equal tax deductions or cash rebates.

A Single Point of Contact

A single point of contact becomes possible when all environmental initiatives are brought under one umbrella. A Green Credits website will encompass all relevant information across all initiatives, with added advice, how-to instructions, frequently asked questions, etc. The website will be where citizens and businesses go to opt-in and enrol for the scheme, as well as being a hub for service providers, such as solar panel or geothermal heating installers, to register, and to log work they perform on behalf of clients (see *Appendix I – Case studies*.)

The website will include a carbon calculator and a broader ecological footprint calculator, enabling citizens and businesses to calculate their emissions and other footprints. Government could make it a requirement of opting into a Green Credits scheme that participants calculate their footprints, in order to establish a baseline to measure future reductions against, and to provide a useful database of information on the distribution of energy consumption, emissions, etc. Using the calculator can be made easy by pre-filling much of the information from verified sources, and asking the user to choose appropriate categories to match their profile.

To further encourage green activity, the website could include a marketplace listing suppliers of green products and services, as well as offering green events listings, green news, motivational stories and so on. In addition, it could include social networking functions like the popular Facebook or MySpace websites, which will allow people to create discussion forums, blogs, special interest groups, etc., around green ideas.

In addition to the website, it will be important that the Green Credits scheme is available to all citizens regardless of their access to the Internet. Therefore, the scheme should also be offered through other channels, such as government offices, post offices, etc. For those without access to these venues or the web, there could be a mail-service (with a small charge to cover the environmental cost).

Green Credits Trading

If government decides to redeem Green Credits with tax deductions, there will be the potential to create a market in Green Credits. Government might wish to consider allowing this for a number of reasons. But first, let's see how Green Credits trading would work.

Because a Green Credit equals 1 tax dollar, it would be worth more to someone on a higher tax rate. At a 40% tax rate, a Green Credit would be worth 40 cents, while at a 20% tax rate the same Green Credit would be worth 20 cents. Someone on a higher tax rate who is not able to generate very many Green Credits, for whatever reason, might then want to buy credits from someone on a lower tax rate who has generated a lot of credits. They might settle on a price of 30 cents, saving the buyer 10 cents and earning the same margin for the seller (see *Appendix I – Case studies* for a more detailed example).

Such a market would encourage those who are able to make the easiest and most economical reductions to move quickly and create a surplus of Green Credits. Arbitrage promotes market efficiency. A market would push the incentives towards those areas where the most significant reductions could be made most readily. And it will reward those who are most active in taking green actions.

A Green Buzz

One of the effects of markets is that they stimulate interest, discussion and interaction. Take stocks markets, for example.

If there is a market in Green Credits, the price will be reported in newspapers and on television. It will create a 'buzz'. People will talk about the price at the water cooler, in coffee shops and around barbecues. It will create a focus on carbon reduction, and give green actions a value that people can relate to beyond idealistic or moral imperatives.

Government can also each month publish the total number of Green Credits it has issued, and their equivalent in tonnes of carbon emissions saved. This will provide a public barometer of how well the country is doing in achieving its target. Government could break the figures down to indicate where most savings are being achieved, say by town or district,



or sector or other classification, to focus attention on areas of concern, or to encourage cooperation or constructive competition between groups.

The value of green – cutting back on carbon emissions, and reducing the consumption of energy, water and other resources – will become part of everyday life and integrated into the nation's culture.

Pushing Green

One of the key factors in the success of loyalty schemes is 'push' – members are encouraged to keep participating in the scheme by pushing reminders and incentives at them. Retail reward schemes push their members to swipe their card to receive points, and remind them in various ways to redeem them later. Governments are already in contact with their citizens and businesses for many purposes, and it would be easy to add reminders and encouragement for a Green Credit scheme in these communications. Some other suggested pushes for a Green Credits scheme are:

- an automated email newsletter with an update on new programs and service providers, as well as success stories and other useful information, all filtered by the individual's preferences;
- a yearly reminder to revisit the carbon footprint calculator in order to benchmark progress and record success;
- promotional information included on bills and other notices from partners, such as utilities, vehicle leasing companies, government, etc., and could include green tips related to the bill, such as further ways to reduce electricity consumption.

Conclusion

A Green Credits scheme for individuals and small businesses will have a number of benefits, especially when compared with alternative carbon reduction or greening initiatives.



- **Easy to understand** – Green Credits use the well-trying, widely understood consumer rewards model.
- **Clear incentives** – in the form of cash or redeemable tax dollars.
- **Positive reinforcement** – people are rewarded for what they have achieved.
- **Pay out only after reductions are achieved** – Green Credits are awarded only for verifiable reductions.
- **A single currency for green initiatives** – covers all government environmental programs.
- **Funded by future benefits** – there is no added burden on the taxpayer.
- **Stimulates a culture of green** – by giving green a tangible value, Green Credits will raise environmental awareness and make sustainability part of the country's culture.

A Green Credits scheme could provide government with an innovative and effective way of reducing its carbon emissions and tackling other urgent environmental issues.

Appendix I: Case studies

The Householders: Helen and James

Helen and James live in a semi-detached house in the city. They hear about Green Credits when they receive their tax forms by email. That same night it is on the news at 6 and at their local grocery store they see an ad for Green Credits. It seems to be everywhere.

Helen and James are concerned about the environment but do not consider themselves as 'green'. They live normal middle class lives, drive a minivan and own a holiday cottage. Their carbon footprint is around average for a household in their country.

The next day at work, James browses through the Green Credits Website and decides to enroll, after all, what's the downside? The government pays him for stuff he does that's green and that saves him money anyway. He discusses it with Helen at dinner. After completing a short registration form, they opt-in to allow their electricity and gas utilities to provide their consumption data directly to the Green Credits scheme, in addition to their frequent flyer miles from their airline and their vehicle type and mileage from the transport ministry. This data is combined to establish a baseline for their emissions reductions.

Helen and James receive monthly statements by email from the scheme, detailing their accumulated Green Credits, listing special promotions, promoting new service providers, and suggesting tips and challenges to reduce their carbon footprints. Over the course of the year, they also get reminders and encouragements to make reductions in the various communications that have with government offices.

The following April, James and Helen receive an email from government congratulating them on the reductions in their emissions they have achieved over the year, and a year-end statement listing their total accumulated Green Credits for tax purposes. They simply forward the statement to their accountant, who enters the balance and their account number on their tax return, and the credits are automatically redeemed for tax dollars. The email containing



the statement also reminds them to return to the Green Credits website and to update their carbon footprint using the calculator, so that they can measure their year-on-year progress.

The Service Provider: Mike

Mike runs his family's plumbing and heating business. Always passionate about the environment, Mike has steered the company towards green practices and specializing in installing renewable energy heating and cooling. Mike is alerted to the Green Credits scheme at an industry event and browses the scheme's website on his return to the office. He learns that his business could be accredited by the Government to issue up to 3,000 Green Credits to clients for each geothermal system they install. Mike searches through the marketplace section of the website and discovers that none of his competitors has registered yet, presenting him with an opportunity to expand his company.

Mike enrolls in the scheme via the website, providing details so that the scheme's staff can validate his company as a legitimate and competent service provider. A few days later, Mike receives a welcome package in the mail, containing his credentials as a licensed Green Credits service provider, and some materials he can give to clients to explain the scheme. That afternoon, Mike visits a potential new client to provide an estimate on a geothermal heating system. The Green Credits materials help him sell the job, and his new client enrolls that evening. When the job is complete, the client provides Mike with his Green Credits ID and Mike visits the website and registers the new system in his name. The client receives an automated email asking him to confirm that the system was installed, and he receives 3,000 Green Credits on his next monthly statement. An auditing system is put in place to randomly verify that no fraud has taken place.

The Small Business: Haydn Software

Haydn Software is a web design specialist. Many of its employees are young and environmentally aware, as are its customers. Gerry, the chief executive officer, is persuaded by his staff that it will be good for the planet as well as their business if they do more to be green. So he installs a bicycle shelter in the parking lot to encourage cycling, institutes a rigorous recycling program and instructs his staff to use green suppliers wherever possible. But his employees think the company should do more, and tell him about Green Credits.



Gerry reviews the Green Credits website with his operations manager and they note a number of tips they can follow to reduce their electricity use, such as turning up the air conditioning system by a few degrees and not leaving computers and appliances on standby when they are not being used. They also see that their business is eligible for insulation and electric equipment upgrade programs under the Green Credits scheme. They sign up for the scheme, opting in to having their energy use data collected from their utilities. They see there are further programs relevant to their company, such as Green Credits for exchanging existing vehicles for hybrids and using more local food in their canteen. Gerry puts these on the agenda for the next management meeting, and sends a memo to all staff asking them to make suggestions as to how they could reduce their energy and water use and earn more Green Credits.

Green Credits Trading: Joe and Al

Joe is a lawyer living in the city and earning \$100,000, which puts him into the 40% tax bracket. He has a relatively high carbon lifestyle – he lives in a large old house with many appliances, travels a lot and works long hours.

Meanwhile, Al lives in the suburbs where he works locally in a hardware store and earns \$20,000, which puts him in the 20% tax bracket.

Al looks at his house and lifestyle he realises that he can make a number of changes that will earn him a large number of Green Credits. He can improve the insulation on his house, fit solar panels, cycle to work and so on. He has the time to do these things, and the incentive because the Green Credits that he earns from lowering his energy use will reduce his taxes. (Since he is on a 20% tax rate, every dollar that his tax is reduced by is worth 20 cents to him.)

Meanwhile for Joe, every Green Credit he earns is worth 40 cents, because he is on a 40% tax rate. But Joe has little time to work on his house. Plus improving its energy efficiency is an expensive and long-term project. Also, travel is an integral part of his job and it will be difficult for him to drive or fly less, at least for the immediate future. Nevertheless, he would like to reduce his tax bill through Green Credits, so he does what he can to make reductions in his lifestyle, and then looks to see where he might get more credits.



Al starts a family and would like to improve his financial situation. By visiting the Green Credits market on the website, he sees that he can sell some of his Green Credits to Joe at a price that is higher than the value of the credits to himself. He offers Joe a batch of credits for 30 cents each, making 10 cents on each credit. Joe is happy with the deal because they are worth 40 cents each to him, so both have benefited.