# The Carbon Footprint and projects

## Issue

For far too long, projects and business have been working to achieve bigger and better, whether this is in the information technology world or for the development and construction of housing or transport.  Each step that we take to the next level of achievement, we congratulation ourselves and we celebrate breaking down another barrier to future successes, but at what cost to our environment and to the planet in which we live?

Every actions of each and every individual, company or nation has a reaction that currently is generating an increase to the earth's carbon emissions, which are without question, linked to the multiple climate changes throughout the world, whether it is through temperature, rainfall or wind.  The governments of the world have all met and each and everyone agrees, some to differing levels than others, that there has to be action taken to reduce every nation's carbon footprint, however the major question that remains unanswered is how and my intriguingly, who will make the move towards this achievement.  Various organisations and scientific communities have put together data and advice of how we can all reduce our own footprints and what effects our actions are having on the carbon emissions, but no one organisation or institution has stepped forward and suggested a practical approach to a sustainable and enforceable approach to taking the first and crucial step.  The idea that everyone and everything around us is totally carbon neutral is not at this time, nor in the near future reasonably possible, however there is a step that can and should I believe, be taken by the project organisations and institutions, whether PMI, APM, APMG or ISEB that could educate and in time change the way that our projects and our work is done that could set the precedent for a brighter and safer future.
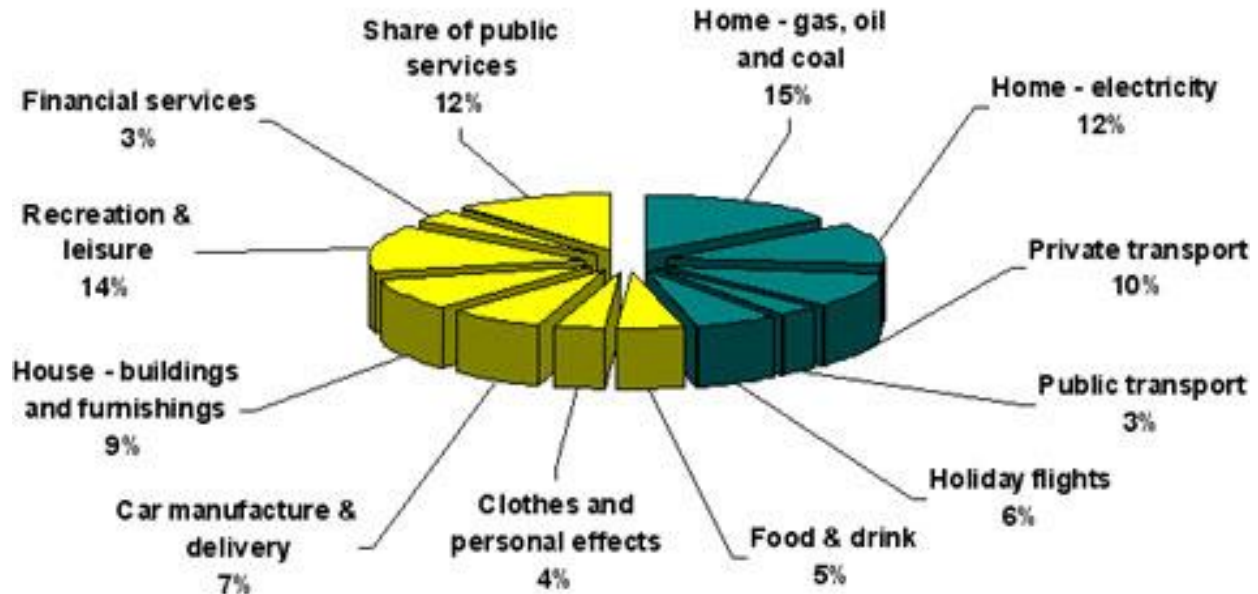
No, this is not another rant or a major push for a greener world, but instead this is an approach or methodology that brings into question how we should do projects in the future and makes project directors, managers and engineers all look in the mirror to ask, what can I do to achieve the goals that are being set for me?  As soon as you think of carbon footprints and the offsetting of the emissions, tree planting comes to mind and this has been shown to be a viable way to offset some of the industries carbon emissions.  This is very true and although this paper explores a new way to view project delivery, this fundamental approach to offsetting is still highly important in the future for the planet and a fundamental component in meeting the

international targets set by all the major governments of the world.  The subject of planting trees to offset carbon emissions has been the centre of some fierce debate over the past few years. Nonetheless through the forums of these constructive debates the consensus is that tree planting is still a valid tool to tackle climate change and one of only a few methods that actually remove existing CO2 from the atmosphere. Through quality research on carbon forestry it is now possible to determine criteria that can influence the success and benefits achieved through tree planting.  The next step beyond simply planting trees is to challenge ourselves, the project fraternity, at the planning and feasibility stages of each and every project, to find alternative approaches or methods to provide the customer with the requirements they need, but to deliver it in the most effective manner, so that the product or service provides as small an increase on our footprint as ever.

So before we started throwing all our project management books away and asking what the new solution is, let us take a look at what it is we are trying to change and to understand exactly what we are dealing with, what exactly is a carbon footprint and what difference does one make?

A carbon footprint is a measure of the impact our activities have on the environment, and in particular climate change.  It relates to the amount of greenhouse gases produced in our routine day-to-day lives through burning fossil fuels for electricity, heating and transportation etc.

The carbon footprint is a measurement of all greenhouse gases we as individuals or as companies produce and is measured in units of tonnes (or kg) of carbon dioxide equivalent. The pie chart below shows the main elements that meet the
make up the average total of a typical individual's carbon footprint for someone living within the developed world.

Financial services
3%

Share of public services
12%

Home - gas, oil and coal
15%

Home - electricity
12%

Recreation & leisure
14%

Private transport
10%

House - buildings and furnishings
9%

Public transport
3%

Car manufacture & delivery
7%

Clothes and personal effects
4%

Food & drink
5%

Holiday flights
6%

The reason behind using the developed world as a baseline for this subject is that the more that we have developed over the years, the greater we, the developed nations, have endangered the rest of the planet. A carbon footprint is made up of the sum of two parts, the primary footprint (the green area of the chart) and the secondary footprint (shown as the yellow portion).

- The primary footprint is a measure of our individual direct emissions of $CO_2$ from the burning of the fossil fuels including our domestic energy consumption and transportation, such as our vehicular transportation or through commercial flying. We have and should take direct control of these elements and also are a key area that project management can heavily influence in the future.
- The secondary footprint is a measure of the indirect $CO_2$ emissions from the whole lifecycle of products we use. This can be associated with the manufacture and the eventual breakdown of a product, facility or service. Put it very simply, the more commercial products that we buy and use, the more emissions we generate.

Over the past two decades the effect has become more marked. Considerable evidence exists that most of this warming has been and is still being caused by human activities, that is to say we have altered the chemical composition of the atmosphere through an increased build up of greenhouse gases, primarily carbon dioxide, methane, and nitrous oxide. However, you have heard this so many times before and all seems well in general with the world, so why change now, what exactly would happen if as we may wish, we do nothing? Over the past few years

rising global temperatures are starting to cause sea levels throughout the world to rise and alter once stable local climate conditions. This is affecting forests, crop yields, and water supplies. It could also in the coming years start to affect human health, animals and many types of complex ecosystems that exist on the planet. This could result in the expansion of the deserts and the alteration of what we currently view as our countryside. In February 2007 this theory was backed up with evidence issued by the IPCC (Intergovernmental Panel on Climate Change whose latest assessment report concluded that global warming was unequivocal and gave the starkest warnings yet that it was very likely that most of this damage was being caused by human activity. Some of the evidence that it demonstrated included:

- Sea temperatures have risen by on average 0.5 degrees C (0.9 degree F) over the last 40 years
- 20,000 square kilometres of fresh water ice melted in the Arctic between 1965 and 1995
- Worldwide measurements from tidal gauges indicate that global mean sea level has risen between 10 and 25 cm (18 cm average) during the last 100 years
- Global surface temperatures have risen about 0.7°C in the past 100 years
- 11 of the last 12 years rank amongst the 12 warmest years on record for global temperatures (since 1850)
- Since 1975, the increase of the 5-year mean temperature is about 0.5°C - a rate that is faster than for any previous period of equal length
- Average annual temperature in the Arctic has increased by about 1° C over the last century -- a rate that is approximately double that of global average temperatures
- There is widespread evidence that glaciers are retreating in many mountain areas of the world. For example, since 1850 the glaciers of the European Alps have lost about 30 to 40% of their surface area and about half of their volume

I myself then decided that having looked into this kind of information, that I would calculate something about me, my contribution to the carbon footprint. This was never going to be a large figure and so I felt this would at least gauge me alongside some of the bigger companies that clearly are to blame for this global problem. I didn't want to carry out a full assessment; I was interested in one small aspect, the fact that as a project management consultant, I travel almost on a daily basis around the United Kingdom, in a very sensible, well maintained car, with a small 1.4 litre engine. The distance I travel I took from my insurance documents so that I could

maintain an accurate reading and then used one of the very many online tools to calculate the carbon problem. I was staggered to discover that my car alone with the miles that I drive every year generates 7.43 tonnes of carbon.

## Solution

So if by now you have started as I had, to determine this as a growing problem that needs addressing, I had to think how. The solution that I have developed is simple, but realistic. In fact the simplicity that it offers is what makes it so appealing and after discussions with a number of well respected individuals within the project management community I have started to develop it. The hardest part of this solution, much as with most projects, would be the engagement of stakeholders and trying to convince them that this will work once it has been seen to work. As I stated early, I started simple and asked the question, how do you make carbon footprint consideration visible and manageable, the answer came to me sooner than I thought. Projects for many years have been measured and designed around three key criteria or principles, time, cost and quality. For the methodology to be considered viable, the carbon measurement had to be the fourth element. Making every project consider what impact the work would have, how it would be carried out and what and how the resulting product, facility or service would affect the footprint had to be the way ahead as only then would it gain the focus it required. Having individuals want to consider this aspect however, would not be easy as there is already plenty to consider within a project, how would you stimulate the project manager to ask themselves the relevant questions?

Most project managers do work to a disciplined structure and so I feel the introduction of a framework rather than a constrained process would allow the project managers to be able to still have control to run the project how they feel is the most efficient and effective, but with certain touch points that make them review what they are producing or creating and then question and measure the impact of the work that they are doing and the item being developed.

This very much therefore, would very much therefore, appear on the lifecycle of the project and beyond very similarly to benefits management. After all, in all essence it should, the project is a benefit after all, for the planet and the environment as a whole if it is handled the correct way and delivered in the greenest manner that the project allows. Therefore, according to many of the major organisations that have developed project management into what it is today, the benefit of a project should be the quantified and measured improvement resulting from

completion of the project deliverables.  This should be exactly the same for the benefits of having addressed the carbon footprint behind each and every project.  Although typically projects benefits are measured in monetary values this benefit, much as some of the more intangible benefits of a project does not fit that rule necessarily.  Again, project stakeholders will judge the success of the project by whether it meets the planned and assessed benefits; this should be true for the carbon footprint also.  Having this identified within a standalone benefits management plan or as part of a business case is not all that important, more so the fact that the project manager has considered the subject and then identified how it will be measured and become one of the acceptance criteria to the relevant stakeholder.  However, knowing the size of the footprint is only part of the matter, the second and most difficult, is challenging the project manager and his/her team to reduce the footprint whilst still delivering the product.

The governments as we mentioned earlier have set a task of reducing the footprint by a significant amount over the next few decades and so the less each project increases the footprint with new builds, the better the chance of meeting this target.  So, for example, a project has been commissioned to build a new school or office building and when the initial assessment is carried out the end product has been identified to produce 100 tonnes of $CO^2$ per day, then it would become the task of the project team in conjunction with the stakeholder to reduce this figure by a set amount, potentially advised through a government advisory, say 40%.  Now it will not be possible on every project and this is something that is recognised as only certain savings can be made in certain ways.  However, simply not being able to achieve the 40% savings on the project should not relieve them from their responsibilities, so as a pay off against the project going ahead, the organisation asking for the new office block should then deliver a parallel project that actively reduces the footprint, as such a green project such as the tree planting projects mentioned earlier.  This project would then balance the new office block will the requirement to reduce the footprint.  Now at first sight this would mean doubling the work and so why would you want to do this?  This is the key aspect to getting the right people on board, wanting organisations to do this rather than telling them to do this.  Each company, organisation, community and country will have different approaches to solving this conundrum, but the message remains the same, it needs to be done and so the bigger names and the right organisations need to want to be involved.  This is why I feel it is important that the project organisations and the project community embrace this as a change for the good and work together to help achieve this goal of changing the view towards projects and specifically project delivery for the future.

Carbon management would then become an important, if not essential activity in the project and would be under the responsibility umbrella of the project sponsor.  This does not mean that it becomes the project sponsor alone that monitors, controls and measures the carbon output, not at all, much like benefits management, he/she would lead a team who would ensure that at each given and agreed check point the carbon output would be measured, monitored and managed throughout the complete project life cycle.

Identifying the Carbon requirements or benefits for the project would typically be carried out during the early parts of the concept phase and then further refined during the definition or development planning phase.  The carbon requirements and benefits management plan would then need to be developed to provide guidance to the team and the project manager on how the carbon benefits are to be achieved.  By producing the plan at this stage of the project it will allow the project manager to develop their project delivery plan taking into account the needs of the client for the product or service being delivered but also the 'how' best to achieve this requirement under the constraint of the carbon restrictions.

The carbon benefits would then be independently reviewed by a member outside the project team, for example from a quality assurance role and then further updated during the delivery or implementation phase as more information and early testing results become available.  This would also encourage the project to be managed in stages that are more manageable so that any problems with delivering to the specified requirements of both the carbon constraint and the quality cost and time considerations of the project will receive the earliest warning indicators to the project manager and their stakeholders as possible.  This may of course result in the project having to be terminated if these carbon benefits anticipated have become too small or even negative, or lead to changes in the project scope.  In addition, an option that becomes available to the project manager and the client alike is that once these figures and measurements show a potential issue, that rather than not delivering the project at all, then an offset project can be constructed or if already planned, amended to meet the additional requirement in meeting the carbon reduction requirement.  Benefits realisation after the completion of the project will ensure that the carbon benefits have been achieved and that the estimated volume of carbon emissions can be tracked and measured after the project deliverables have been placed into their relevant operational environment.  The benefits realisation reviews would be undertaken by the project sponsor after an agreed period of time after the product or service has been placed into operations to establish that the carbon benefits had been realised. A suggested content for the carbon benefits management plan could be:

Benefits - The results expected from the project deliverables after being placed in the operational theatre.  These should be clearly quantifiable and measureable.

Benefits Profile – This would demonstrate further than simply by describing the deliverable as a whole, more specifically when, where and how the carbon benefits will be realised.

Roles and Responsibilities – As mentioned earlier, the project sponsor would take overall responsibility for the achievement of the carbon benefits, however other stakeholders or specialist team members would be involved including those working within the business as usual activities.  The plan would define the specific roles and responsibilities of each participant.

Tracking and Control – Within this section a clear and concise explanation on how the achievement of the carbon benefits would to measured, managed and monitored.  This would demonstrate to all those both directly and indirectly in the project that this is not something which is identified in the early stages and then left until final delivery, but in fact a key component of the project and as equally a measureable as any of the other project benefits.

Carbon Benefits Reviews – This section would define the objectives, timings, stakeholder involvement and reporting requirements for each review.  This would detail what and when each review would involve and how they would be undertaken, in what periods of the project both during the delivery and once the project deliverables had been released into operation to establish that the benefits are being achieved and realised.

Benefits Definition – Much like a project has its success criteria, the quality of the carbon benefits and defining how they are made up is an important factor.

Description - What exactly is this carbon benefit?  How is this reduction in or neutrality of carbon being beneficial?  Generally, if a project has an understanding of why it is doing an activity or delivering a product in a given way, they are more likely to buy into the methodology or service it is providing or affecting.

Observation - How will the organisation be able to observe the benefit?  With a project being able to demonstrate increased sales is easy, but reducing a carbon emission or the footprint is something a little more difficult to demonstrate.  Within this section the organisation would have to describe the process in which this carbon benefit would be validated and demonstrated to an

outside auditable agency to justify the delivery of the project and/or the offset required within a further piece of work.

Attribution – This section of the document would be a learning section for many people both in and out of the business area as here a description of what parts of our business operations this benefit would arise and how to show who would have to change their working practices in order to achieve the required carbon benefits.

Measurement – Finally, exactly how are the carbon benefits going to be measured?  In some cases this will be simple and obvious, but in many it will be difficult, in fact when some will inevitably say impossible to prove.

## **Summary**

Today, we live in a world of high speed, high technology innovation.  The need to feed this ever increasing requirement by businesses and people in general is having an ongoing detrimental effect on the environment and so therefore has to be addressed.  The world is moving forward faster than ever before and so the carbon increase is becoming greater by the day.  My belief is that the project community has a very key role to play and responsibility to take within this solution.  By setting out an enhanced or improved approach to delivering projects and taking a consideration of the effect our work has on how the profession and the environment moves forward would demonstrate to the global community that we understand and appreciate that the world is moving forward but that we as a group have a panoramic view on this and that we are actively working in partnership with others to make a future for many generations to come.

Whether the end solution is a highly complex process map to show how we change the method of delivery of our projects or if it a simple inclusion of a new technique to each and every project managers skills toolbox, that is uncertain at this time, however what we do know is that change is afoot and that whenever or wherever it occurs, it will be the project people and the project community as a whole that will be leading this change.  All too often a challenge has been met with a scientific theory that explains the issue and holds us accountable to what might happen if we do not change the direction we currently take, but project managers globally have always been trained and are experienced to know the answer is the solution and the discovery of the solution is part of the journey.  Those first steps are in identifying the causes of the issues so that a clearer picture can be gained and a route map to success can be achieved in the future,

what some people have not recognised yet though, is that they are the future and are about to discover it very soon.  With the right preparation and with a robust plan, the right skills and the observation tools, this project, as large as it seems right now, is a manageable project and will be a successful project.