# SUPPLEMENTARY SUBMISSION TO THE SENATE ECONOMICS – LEGISLATION COMMITTEE INQUIRY INTO THE SAFE CLIMATE (ENERGY EFFICIENT NON-RESIDENTIAL BUILDINGS SCHEME) BILL 2009

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## 1. Introduction

Further to our written submission to the Inquiry in November 2009, we now submit a supplementary submission to advise of recent news regarding the Efficient Building Scheme - which provides the basis for the scheme outlined in the legislation before the Committee – and related matters.

In particular, this supplementary submission documents recent international news regarding buildings and climate change, underscoring the failure of existing policy approaches, and the trend towards cap-and-trade schemes for buildings.

We also note that since we made our submission Maria has been appointed to the Board of the US Green Building Council, and Ché has been appointed Chair of the joint international project of the World Green Building Council and the Sustainable Building Alliance to develop 'common carbon metrics' for buildings.

## 2. Executive Summary

Around the world governments and policymakers have been recognising the enormous carbon abatement potential of existing non-residential buildings, and trying to unlock the potential.

So far no policy has realised that potential, be it building code reform, government grants, or 'white certificate schemes'.

Yet we already have the skills and technology to halve emissions in the sector right now, which would deliver a 7.7% reduction in Australia's national emissions by 2020.

The good news is that Australia is in the fortunate position to learn from other countries which have tried a range of voluntary complementary measures within the building sector, as well as from the growing research and analysis, and to chart a better, more effective way forward.

The Tokyo Metropolitan Government has trialed mandatory disclosure, low-cost energy plans and white certificates. They achieved a 2 percent reduction over a 3 year period. In April 2010 they are introducing the world's first cap-and-trade scheme for buildings.

At the same time, Seoul, Korea is also introducing a 3-year trial cap-and-trade scheme for buildings, with a 10% emissions reduction target.

In the UK the Government is dispensing with its 'white certificate' scheme and is moving ahead with its Carbon Reduction Commitment Energy Efficiency scheme, which takes effect in April 2010, and will cover only 50% of non-residential buildings.. This 'penalty only' scheme was initially slated for large property portfolio owners only, but is now being considered for Small & Medium Enterprises (SMEs) and a cap on emissions from all buildings is now needed.

And in the USA, the Waxman-Markey Bill has a focus on green refurbishment of existing buildings. The US think tank, the RAND Corporation, has advised that one of the best policy instruments is the Efficient Building Scheme.

At the same time there is growing international interest in the Efficient Building Scheme that we have developed, at all sorts of forums, including most recently:

- G'day USA Australia-US Energy Dialogue (Los Angeles, USA)
- World Future Energy Summit (Abu Dhabi, UAE)
- International Green Building Conference (Singapore)
- US Green Building Council 'Greenbuild' conference & exhibition (Phoenix, USA)

In response to this interest, in early January we posted on YouTube a 4-minute video on the Efficient Building Scheme, which we invite the Committee members to view. http://www.youtube.com/watch?v=u4rM6CINpwk

In December 2009 the UK Carbon Trust released a report on the role of buildings in emissions reductions. The Trust is interested in the Efficient Building Scheme. The report singled out clear trajectory setting as the most important thing Government can do for the building sector.

There is a growing consensus that meaningful emissions reductions will only be realized for the non-residential building sector through the setting of an emissions cap, providing a clear trajectory, and placing a market price on carbon emissions.

We are finalising economic modelling of our Scheme by the Energy Efficiency in Buildings project of the World Business Council for Sustainable Development.

Importantly, carbon abatement in the building sector also drives economic growth – creating jobs and boosting Australia's international competitiveness.

It would also help put a lid on higher energy prices for Australian households by reducing energy demand and therefore deferring future costs associated with new infrastructure. We know from NSW IPART that every dollar spent on demand management saves $6.50 on energy infrastructure spending.

The Efficient Building Scheme can deliver all this, yet at the same time it is a simple, fair, low-cost scheme which is based on annual electricity and gas bills, the type of building and its floor area, and publicly available greenhouse gas statistics from the Department of Climate Change.

It is low cost to both building owners and the Government, and yet by being tailored to the non-residential building sector, it provides a real 'enabler' for the sector to deliver deep, fast carbon emissions reductions.

At the same time, it will complement and help simplify existing policy measures, including the existing National Greenhouse & Energy Reporting (NGER) Scheme, the Energy Efficiency Opportunities (EEO) Scheme, and the imminent Mandatory Disclosure of Commercial Building Energy Efficiency.

The Scheme remains at the forefront of international policy development for carbon abatement in the building sector, and will enhance Australia's competitiveness internationally by leveraging market smarts to find the fastest, most cost-effective abatement opportunities.

### 3. Efficient Building Scheme – Key characteristics & benefits

http://www.youtube.com/watch?v=u4rM6CINpwk

While existing policies and schemes for encouraging energy efficient buildings have failed to unlock the enormous carbon abatement potential in existing buildings, wherever they have been tried, the Efficient Building Scheme will provide a real incentive to building owners to undertake substantial energy efficiency improvements to their buildings, as soon as practicable.

As a cap-and-trade scheme specifically for the non-residential building sector, the Efficient Building Scheme is:

- **Simple.** It is based on a base building's electricity & gas bills for a calendar year (ie, not on a tenant's bills), measured against its floor area, and a calculation using readily available state- and energy-specific greenhouse gas statistics; there is no requirement for building owners to read meters separately or to do complex calculations.
- **Fair.** It applies equally to all owners of non-residential buildings owners, providing a real incentive to undertake energy efficiency improvements as soon as possible, with financial reward for energy efficient buildings, and a financial cost for inefficient buildings. It is a cap-and-trade emissions trading scheme identical to an emissions trading scheme except that it recognises energy efficiency improvements in non-residential buildings, rather than emissions avoided.
- **Low-cost.** The transaction cost for a building owner is minimal, given the transaction involved is simply collecting annual electricity & gas bills, knowing the floor area, and doing a calculation using readily available state- and energy-specific greenhouse gas statistics – something corporates might do in-house, and smaller owners might outsource to a broker. With no requirement except to maintain a registry of buildings, the cost to the Government is also minimal.
- **Appropriate.** By being specific to the non-residential building sector, the Scheme is tailored to the unique characteristics of that sector, with an obligation on building owners equating to an obligation on the best point of opportunity in the sector.
- **Effective.** Unlike other solutions which have been tried and failed, the Scheme will drive deep, fast reductions in carbon emissions across the sector, by enabling robust benchmarking, target setting, measurement and monetisation of carbon.
- **Transparent.** Provides a clear price signal to the market to act, without asking Government to 'pick winners' or make other subjective judgements.

***What the Scheme is NOT***

- ***It is NOT a tax.*** *A tax is a financial cost only, which is about raising revenue for Government. The Efficient Building Scheme offers financial reward & cost/ penalty, depending on where a building sits against the benchmark or cap. Given that permits are allocated up to the cap, nor is the Scheme revenue-raising.*

- ***It is NOT a baseline-and-credit scheme.*** *This Scheme allocates permits to the cap, which is based on a decreasing trajectory.There is a mandatory obligation to acquit permits by trading with better performing buildings, where a building exceeds the cap. (Please refer to statement by Freehills for further information.)*

An Efficient Building Scheme will succeed where other measures have failed because of four shifts in approach:

1. It moves the point of obligation to the building owner, so that obligation is aligned with ownership, opportunity and operation, and is not reliant on capital investment in equipment;
2. It creates a low cost of transaction, allowing for universal application and annual auditing for robustness;
3. It provides reliable benchmarks/ trajectories into the future, providing investment certainty, allowing for assets and liabilities to inform valuations, and providing an ability to balance against deferred infrastructure investment; and
4. It balances abatement credits with an obligation for inaction, which ensures an equitable approach, provides all the fiscal instruments of a cap and trade Emissions Trading Scheme, and allows for a 'stand alone' operation.

**BENEFITS OF THE SCHEME:**

- **50% reduction in carbon emissions in our cities by 2020** using existing knowledge and technology, by providing real incentive for owners of existing office buildings, hotels, shopping centres, public buildings, hospitals and schools to effect substantial energy efficiency improvements as soon as possible. ***In Australia a 50% reduction in emissions across the non-residential building sector by 2020 is equivalent to a 7.7% reduction in our national emissions.***

- **Drives economic growth, including job creation**. Studies consistently point to investment in energy efficient buildings securing existing jobs in the building sector and driving significant new skills, jobs and innovation growth. Real estate and construction and sector service companies including the professionals and trades would grow in response to greening existing buildings.

- **Demonstrates global policy leadership.** Around the world policymakers are looking for ways to reduce carbon emissions economy-wide and, increasingly, their focus is including the built environment. For example, the UK Government has stipulated that by 2016 all new homes must be zero carbon and announced its ambition that all new non-domestic buildings should be zero carbon from 2019 (with earlier targets for schools and other public buildings). Creating an incentive for emissions reductions in the Australian non-residential building sector, will create opportunities for exportable skills and business opportunities.

- **Defers or reduces energy infrastructure costs**. For every AUD$1 spent on demand management, studies have shown the need for investment in energy infrastructure is deferred or reduced by AUD$6.50. This alone is a compelling business case.

- **Provides financing and investment certainty.** By providing a penalty price for carbon and a long term trajectory for the carbon cap against which a building is to be accountable, the Efficient Building Scheme provides certainty on both liability that will be avoided and credits that will generated through a green refurbishment. This amplifies the energy cost savings but also separates financing from the design and contracting costs to ensure the greatest flexibility to find the best answer for each building.

- **Provides meaningful information for owners.** By providing a benchmark for each building type, in each climatic region, the Scheme will ensure meaningful information is provided to building owners, allowing them to prioritise capital investments in their assets. Without the benchmark, carbon footprinting of a building or a property portfolio is meaningless.

- **Future-proofs buildings.** By providing real incentive to effect substantial energy efficiency improvements as soon as possible, it will increase asset values, yields and investment returns for building owners. This will also help adaptation that is needed in regions that are vulnerable to the impacts of severe weather.
- **Avoids the 'lock-in effect'.** There is a growing concern among policymakers internationally about the 'lock-in' effect. That is, where a policy only drives a less than 25% reduction in carbon emissions, because of the industry's long lead times, the building will have its carbon footprint 'locked in' until such time as the investment is recovered, which could be many years. It is therefore imperative that whatever policy is introduced to stimulate green refurbishment allows for maximum carbon reduction. We need to ensure that the best solution is found for each building rather that the easy one. Energy savings of greater than 50% have been proven to be a realistic target if a building undergoes green refurbishment rather than just updating inefficient equipment such as lighting or HVAC systems.
- **A genuine plan for cities.** While the Scheme calls for a national target for each building type, by proposing that each building type is measured against a carbon cap trajectory specific to its urban centre, each city will be able to develop its own specific carbon abatement plan. This will enable cities to be sensitive to the capacity of electricity supply infrastructure, market robustness and political objectives, and also allow for the maximum realisation of deferred infrastructure spending. Cities that are committed to greenhouse abatement such as the C40 (the world's largest cities – including Sydney and Melbourne - committed to tackling climate change) may wish the trajectory to be more aggressive to mirror their commitments for carbon abatement.
- **Good behaviour dividend.** As well as providing an incentive for physical upgrades to the building, the Scheme will provide a mechanism for building owners to ensure better management of their assets by managers and occupants. This 'good behaviour dividend' is unique to the Efficient Building Scheme as it assesses only the year on year operational carbon footprint. By contrast, White Certificate Schemes deem carbon credits contingent on a physical intervention or product, with no verification of actual performance and therefore provide no guarantee that the building will not be operated inefficiently after the credits are received.
- **Robust, complementary solution for other measures.** The annual measurement and verification components of the Efficient Building Scheme provide a robust solution for a whole raft of complementary measures to further incentives and drive action in the building sector, including: green bonds; assisted financing; grants; and accelerated asset depreciation. The data collection, reporting, and benchmarking elements will complement , even simplify and enhance, existing measures, including NGERS, EEO and the imminent Mandatory Disclosure of Commercial Building Energy Efficiency, and this will reduce the administrative burden for industry.

- **Delivers health and productivity benefits**. Studies consistently show productivity increases of around **10%** and decreased sick days of around **40%** in buildings which have been certified as green buildings.

- **Internationally trading compliant.** The Efficient Building Scheme keeps intact those elements that are critical for true carbon accounting, whilst having the flexibility to have the credits generated recognised under the Kyoto Protocol and, by assumption, any post-Kyoto agreement. By being able to be verified, the savings will be able to be included in the national inventory.

- **Boost international competitiveness.** Through market mechanisms such as Green Star, Australia has quickly transitioned from laggard to world-leader in the delivery of commercially astute, new green buildings. In the same non-prescriptive way, this Scheme will provide a true market mechanism which will stimulate innovation in the industry to find the fastest and least-cost pathway to significant carbon abatement. This will establish Australia as a world-leader for carbon reduction in urban environments, which will create exportable opportunities for skills and services.

## 4. EFFICIENT BUILDING SCHEME – The sum of its parts

The Efficient Building Scheme could stand alone, or it could operate alongside an Emissions Trading Scheme.

Reporting could start almost immediately – allowing a transitional period for benchmarks to be set, before penalties kicked in.

To establish the Scheme, we believe a 12-month period of data collection would be required, followed by a 6-month period of analysis, in which benchmarks and trajectories could be set.


### Scheme design

The design of the Efficient Building Scheme is based on the recognition that if we are to reduce carbon emissions in the real estate and construction sector, we need to be able to do three things:

1. We need to enable market benchmarking and decision-making through robust labelling: Policymakers need benchmarking for setting building codes and for development planning; Shareholders need it for investment decisions; and Organisations need it for leasing and purchasing decisions.

2. We need to enable accurate reporting – whether this is for voluntary reporting indices such as Global Reporting Initiative, Dow Jones Sustainability Index, or the Carbon Disclosure Project, or for national inventory reporting under the Kyoto Protocol and its successor.
3. Finally, we need to enable the direct monetisation of carbon.

**Data collection**

Central to the delivery of each of these three levers, we need robust, accurate, unassailable data on greenhouse gas emissions from buildings.

The base data is readily accessible:

- energy consumption (electricity and gas bills, including any on-site energy generation);
- building type (office, hotel, retail, school, etc);and
- location (climatic zone and/or economic centre).

From this data, we can easily calculate:

- energy intensity (kWh/m2/annum); and from this
- carbon intensity (tCO2e/m2/annum using official greenhouse gas emission coefficients for fuel sources).

This single, readily accessible data set can enable market benchmarking, corporate or statutory reporting and direct monetisation of carbon for the building sector.

So we do not need to re-invent the wheel nor delay action because we need to train a new workforce.

Leveraging a single data set will ensure that compliance costs are reduced to a bare minimum. Lower compliance costs will enable broader participation and ensure that capital is directed towards building improvement..

A simple set of overlay and publishing rules will enable accurate accounting for carbon that is tailored and relevant to the decision being made, whether the decision is regarding an asset purchase, a tenancy lease or capital investment prioritisation.

## 1) Decision-making & Benchmark

A common data set collected through mandatory reporting obligations will provide an understanding of the average carbon intensity for different building types in different locations, and enable a benchmark to be set for each marketplace.

A benchmark is needed as a reference point from which to measure carbon abatement, enabling building owners and Government alike to accurately measure a building's performance in relation to the benchmark.

Without a benchmark against which to analyse a building's performances, the energy consumption and greenhouse gas emission data has little meaning or value for the sector.

Once we have a benchmark, we can set a medium-to-long term trajectory, which reduces over time to reduce the average building's energy consumption and greenhouse gas emissions. This trajectory provides certainty for the industry regarding expected market performance and, in order to maintain or improve asset value, this information will drive early action which could halve building emissions in our cities by 2020.

The trajectory also enables medium-to-long-term planning by cities and Governments.

By dictating the quantity of abatement to be achieved, but not how it is achieved, an aggressive trajectory will stimulate innovation in the building sector. This trajectory becomes the future building code benchmark.

Finally, a benchmark is also the key challenge for enabling the monetisation of carbon.

- **Climate and fuel supply equity**

One of the difficulties in defining any carbon targets for buildings in Australia is the large climatic variations between our urban centres and also the inherent impact in the carbon intensity of the fuel available to a given centre. For instance, a building in Melbourne is more energy intensive than in Sydney as the climate is tougher. In addition, the electricity supply in Melbourne is also some 40% more carbon intensive than Sydney so the same target for both would be very unfair to building owners in Melbourne. The problem is especially acute if we consider Hobart, which has a very benign climate and very carbon free electricity through its hydroelectric generation.

Previous attempts to solve this have attempted to either 'correct' for climate zone, distort carbon intensity figures, or in the case of NABERS Energy, both. For instance, NABERS Energy uses a vastly inflated figure for carbon intensity in Hobart to ensure it does not get 5 stars for every building and the climatic adjustments have inherent assumptions about building technology that are not accurate for the range of technologies in contemporary Australian buildings. This is required because the same level of carbon intensity/m2 is used to achieve a 5 star rating throughout Australia and the building carbon output is adjusted to compensate. The downside of this approach is that the attempts to achieve equity come at the expense of any semblance of accurate carbon reporting.

The Efficient Building Scheme solves this by simply localising the benchmark (the carbon cap trajectory) and leaving the building carbon intensity unchanged. Rather than estimating or trying to calculate the differences between urban centres, it simply measures against the average performance of buildings of the same type in the same urban centre. This is simple and equitable, ensuring fairness and also keeps intact those elements that are critical for true carbon accounting and having the flexibility to have the credits generated recognised under the Kyoto protocol and any post-Kyoto agreement.

**2) Reporting**

This chain of custody for carbon accounting will provide a common data set that can also be used for voluntary reporting needs for corporate social responsibility.

We can also *mandate* reporting of every building's energy and carbon intensity annually – still from this single robust data set.

**3) Monetization of carbon**

We know that improving the energy efficiency of buildings is the least cost abatement opportunity, yet inherent market and policy failures inhibit the investment that is needed.

A solution is needed that will overcome these failures and stimulate substantial energy efficiency improvements quickly and cost-effectively across the industry.

By comparing a building's energy and carbon intensity against the trajectory, we can determine its performance against the benchmark. We can then apportion a reward or penalty, accordingly. In other words, provide not just a 'carrot' but also a 'stick'.

For industry players committed to doing the right thing there would be a financial return. But there would also be permits for *in*action which would stimulate the whole sector to act to improve the performance of existing buildings.

## 5. Efficient Building Scheme – step by step

**STEP 1:** Each year a building owner calculates the total greenhouse gas emissions for each base building.

This requires the building owner to collect energy (electricity and gas) bills for the base building, as the basis for a simple calculation which could be done either in-house (at the corporate level) or by a third party broker.

To calculate the emissions, the energy data needs to be converted using the national greenhouse gas co-efficients which are specific to the energy source, and the state in which the building is located. These statistics are readily available from the Federal Department of Climate Change. *(see below)*

(For example, there are more greenhouse gas emissions associated with electricity in Victoria where it is predominantly generated from brown coal, as opposed to hydro-electricity in Tasmania.)

**STEP 2:** The total emissions are divided by net lettable area (NLA) to derive efficiency (or 'emissions intensity') figures in tonnes of greenhouse gas per square metre ($tCO_2^e/m^2$), so that large inefficient buildings aren't inadvertently rewarded.

**STEP 3:** An independent broker verifies the efficiency figures and compares them to the predetermined cap (or 'trajectory' or 'threshold') set in advance by the governing body and the building's avoided emissions or excess emissions are calculated.

**STEP 4:** Permits are allocated or acquitted respectively.

**Greenhouse Gas Coefficients**

The N*ational Greenhouse Accounts (NGA) Factors (June 2009)* published by the Department of Climate Change Australia is "designed for use by companies and individuals to estimate greenhouse gas emissions for reporting under various government programs and for their own purposes."

The emissions factors taken into account the greenhouse gases comprising of carbon dioxide, methane, nitrous dioxide and synthetic gases. The greenhouse gases are expressed throughout this report as carbon dioxide equivalent ($CO_2$-e) which takes into account the global warming potential of the respective gases.

For example, the following table shows the Greenhouse Gas Coefficients applied where scope 2 emission factors have been applied to purchased electricity.

| State or Territory | Electrical Emission Factor (kg CO2-e/kWh) |
|---|---|
| NSW | 0.89 |
| ACT | 0.89 |
| VIC | 1.22 |
| QLD | 0.89 |
| SA | 0.77 |
| WA | 0.84 |
| TAS | 0.23 |
| NT | 0.69 |

(Source: National Greenhouse Accounts (NGA) Factors – June 2009)

## 6. List of Supporters

| | | |
|---|---|---|
| Tim Flannery | Professor, Macquarie University; Chair, Copenhagen Climate Council | International |
| Greg Bourne | CEO, WWF-Australia | Australia |
| Nicky Gavron | Member, London Assembly; founding member, C40 | UK |
| Joe Van Belleghem | Founder, Canada GBC; Green property developer | Canada |
| Jerry Yudelson | US green building consultant and author | USA |
| Craig Roussac | General Manager, Sustainability Safety & Environment, Investa Property Group | Australia |
| Rod Leaver | CEO (Asia Pacific), Lend Lease | Australia |
| Steve McCann | CEO (Global), Lend Lease | Australia |
| Rick Fedrizzi | President & CEO, US Green Building Council | USA |
| *David Gottfried | Founder, US & World Green Building Councils | International |
| Alfonso Ponce-Alvarez | French Ministry for Sustainable Development | France |
| *Sara Hayes | Teigland-Hunt | USA |
| David Glover | Arup | International |
| Stuart White | Institute for Sustainable Futures, University of Technology Sydney | Australia |
| Caitlin McGree | | Australia |
| Peter Sharratt | WSP | UK |

*Please see statements of support below, as well as a statement by Dr David Vincent, UK Carbon Trust.

**Statements of support**

*"UK based research by the Carbon Trust, an independent company set up by the UK Government to accelerate the move to a low carbon economy, shows there is a huge potential for action to improve the long term commercial viability of the building stock through investment in low carbon and energy efficiency measures. Lower running costs, a stock which is resilient to carbon regulatory pressure and the creation of better, more productive working environments are just some of the benefits which we think are possible. However, these investment decisions will not happen naturally: the market takes too short term and narrow a view of investments in relation to returns. Markets need clarity of intention from Governments to change patterns of investment behaviour. By making clear their intention to move to a low carbon, sustainable energy economy, by setting a clear trajectory for carbon emissions reduction over the decades to come, and by demonstrating leadership through purposeful, green public procurement, Governments can, through non-prescriptive interventions, catalyse market ingenuity and capital to help create a building stock which will play its part in creating a low carbon, clean energy future."*

***Dr David Vincent***
***Director, Projects***
***Carbon Trust***
***UK***

Lend Lease

WSPLincolneScott Advanced Environmental

REGENERATIVE VENTURES

February 3, 2010

Dear Sir:

**Re: Submission to the Inquiry into the Safe Climate Bill 2009**

There is no question that the built environment is the largest source of carbon emissions in our cities.

The green building movement is probably the biggest global force for carbon mitigation in the world, and we have the skills and the technology to reduce carbon emissions by 50% and more right now. But while we have revolutionised the new building market, the existing building market presents a bigger challenge.

After all, the average age of the existing commercial building stock is around 30 years. Most of these buildings are Class B, or even C. They require full systems upgrades to bring them to modern and green standards of quality and performance efficiency.
Simply changing out light-globes or replacing aging components in a HVAC system with new parts doesn't come close to realising the potential of existing building stock to reduce greenhouse gas emissions, yet this sort of piecemeal improvement has been the best that white certificate schemes can stimulate wherever they have been tried. While industry best practice tools and reform of building codes are relevant and important instruments for new construction, neither are appropriate for driving the quantum leap that is needed in reducing carbon emissions in existing buildings.

Maria Atkinson and Ché Wall are recognised internationally as leaders of the green building movement.

I believe the Efficient Building Scheme that they have developed is leading the way for our movement as it searches for a simple, fair, low-cost solution which is both appropriate and effective for our industry. By providing real incentive and investment certainty, it makes it financially viable for building owners to undertake the energy efficiency improvements that are needed, and which will benefit us all.

The proposal will deliver economic benefits including skills and services as well as result in reducing the infrastructure burden on our cities.

The Efficient Building Scheme is a world-leading solution and I commend it to the Australian government as a step change in thinking to drive emissions reductions, while at the same time driving economic growth.

Best Regards,

David Gottfried
CEO, Regenerative Ventures
Founder: U.S. and World Green Building Councils

Senate Economics Committee
Parliament of Australia
c/o Ché Wall
WSP Lincolne Scott

**Re: Submission to the Inquiry into the Safe Climate Bill 2009**

February 4, 2010

Dear Sir:

I am writing to urge you to support adoption of the Efficient Building Scheme (the "EBS"). Addressing greenhouse gas emissions in the building sector poses unique challenges, particularly for preexisting buildings. However, meaningful pollution reductions without expensive retrofits is entirely possible. There is a great deal of evidence that simple and cost-effective solutions have not been implemented. Even the most minimal pollution reduction techniques, such as changing a light bulb or turning out the lights in an empty room, have not been employed. The EBS approach provides an incentive to solve this problem by rewarding implementation of these and other simple solutions.

The EBS approach provides a flexible incentive for building owners to find solutions for improving the performance of inefficient buildings while reducing operating costs. This approach facilities and encourages creative and innovative thinking by Australians. It provides an opportunity for citizens to become involved in shaping industry practices and standards by leveraging their expertise and rewarding efforts that result in a healthy planet for all Australians.

Further, it is clear that other approaches to address greenhouse gas emissions from the building sector have failed. Enacting a mandatory program is an effective way to ensure that there is a monetary reward for those building owners that take responsibility for their own emissions. A voluntary program actually has the potential to punish those "good actors" as any investments they make will be harder to recoup while other buildings continue to let the public bear the cost of their emissions. Additionally, many efficiency improvements require upfront costs that can be recouped over time via reduced energy costs. A mandatory program provides regulatory certainty giving building owners confidence that their longer-term investment decisions will be worthwhile.

A meaningful change is needed to address greenhouse gas emissions in the building sector and shift the cost of pollution off of the shoulders of the public back to the responsible entities. I believe the EBS approach can achieve these goals while encouraging innovation and economic growth in the sector.

Sincerely,

Sara Hayes
Author, "Emissions trading: a building block to the climate change solution?"
Green CITYnomics: The Urban War against Climate Change

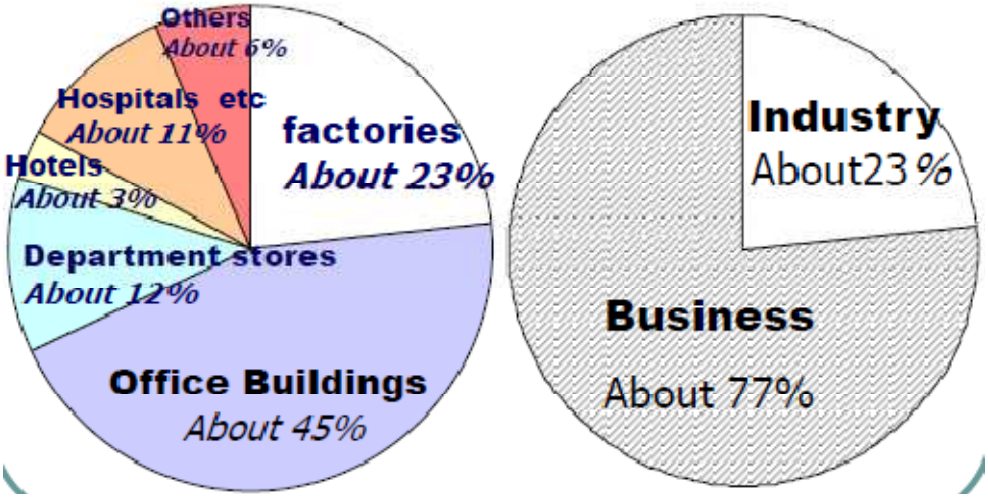
Ms. Hayes has over a decade of experience in the energy and greenhouse gas sector as a policy analyst,attorney, educator and author focusing on development and implementation of emissions trading programs, environmental regulations and commodity trading. She has advised a variety of public sector and private industry groups, providing them with guidance regarding the implementation and development of national, regional and state environmental regulations. Ms. Hayes has specific expertise drafting a variety of regulatory programs targeting Northeastern US energy markets and has assisted in the development and analysis of several market-based emissions programs. She has also worked to develop consensus responses to US federal programs and has advised on the development of emerging
energy markets in the US and abroad.
***Specialties:*** Emissions trading, incentive-based environmental regulations, legislative and regulatory analysis and advisory services, renewable energy credit trading, documentation of "green" product trading, legislative tracking of financial reform and climate change efforts.

## 7. International Lessons

- **Tokyo Metropolitan Government**

We have been in discussion with architects of the Tokyo Metropolitan Government's world's first urban cap-and-trade scheme, which starts on 1 April 2010.

The scheme will cover 1400 installations, including commercial office buildings and industrial facilities.




It sets a 2020 target of reducing carbon emissions by 25% (below 2000 levels), with a cap set at a level of 6% below base emissions for the first compliance period(2010-2014), and then approximately 17% below base emissions from 2014 to 2020.

The cap-and-trade scheme is interesting in itself, but it is particularly interesting in the context of other measures which the Tokyo Metropolitan Government have introduced since 2002.

In 2002 the Tokyo Metropolitan Government introduced the 'Tokyo CO2 emission reduction program' – essentially a mandatory reporting and disclosure scheme.

In 2005 the Tokyo Metropolitan Government tried to introduce a mandatory program but were unable due to stakeholder opposition.

Reportedly, "industry associations (were) strongly against" the scheme's introduction, preferring voluntary measures. (Noriaki YAMASHITA, Institute for Sustainable Energy Policies)

Instead, they introduced a voluntary 'white certificate' program along with a framework of guidance and advice on low-cost measures, evaluations, and public announcements.

In the 3 years from 2005 to 2008 this delivered only 2% reduction in emissions.

According to analysis by Deloitte:

- Most reduction targets and plans remain at a basic level.; and
- Planning in-depth measures to achieve significant greenhouse gas emission reductions under a voluntary system is exceedingly difficult.

In 2008, following extensive stakeholder consultation, the Tokyo Metropolitan Government announced its intention to introduce a mandatory cap-and-trade scheme for buildings in April 2010. By this time 3 out of 4 developers were in favour of the scheme.

Architects of the scheme confirm that it will be a low cost program for Government.

- **South Korea**

  In December 2009 the Seoul Metropolitan Government said it would make regulations on carbon emissions trading and hold a 3 year trial of the carbon trading system among 54 state-run public agencies from April 2010, with a goal to achieve a 10% emissions reduction.

  The Government will also encourage the private sector to voluntarily join the reduction efforts during the three-year trial operation period.

  Carbon emissions trading will be conducted virtually through an online trading system each quarter. and the city will offer monetary incentives to organizations that perform well.

  Institutions that have secured additional carbon emissions rights by surpassing the emission reduction targets will be required to sell its excess rights. Those that fall short of their targets must buy emissions rights to offset the shortfall.

  The trading results will be accumulated and translated into carbon emissions rights based on trading prices at the end of each year.

  Incentives will be given to companies depending on whether they have met or surpassed targets for reducing greenhouse gas emissions, how many carbon credits they hold, and their performance in carbon emissions rights trading.

  Based on the amount of energy public organizations in Seoul consumed for heating or cooling their buildings from 2007-2008, the city will set a standard emission volume for each organization.

  The city will offer to the participating organizations carbon emission rights free of charge, which will allow them to emit 90% of their standard emission volume and enable them to seek a 10% emission reduction.

  To help the organizations meet the reduction goal, the city will carry out a set of measures aimed at enhancing energy efficiency, such as installing light emitting diode lighting systems in public buildings.

- **United Kingdom**

  The UK Government introduced a ‘white certificate’ scheme - Energy Efficiency Commitment (EEC), later renamed the Carbon Emissions Reduction Target (CERT) in 2002.

  In April 2010 a new ‘penalty only’ scheme takes effect – the Carbon Reduction Commitment

Energy Efficiency Scheme.
*Please see more information about the UK experience in 'International support' (below)*

**International Support**

- **United Nations Environment Programme – Sustainable Buildings & Climate Initiative, *Common Carbon Metric for Measuring Energy Use & Reporting Greenhouse Gas Emissions from Building Operations*, December 2009**

*The challenge is therefore to design mechanisms that will redirect the economic savings associated with emissions reductions in buildings to offset the increased investment costs for energy emissions reductions measures. This may take the form of three basic models:*

i. *Establish an investment fund for energy efficiency in buildings. This fund would be used to support additional initial investment costs for energy efficiency in buildings and could be financed through levies of energy use above the national average or baseline for that particular building type in the country. In this way, the fund would provide additional incentive for reductions among high energy users. This fund could also be financed by redirecting investments in increased energy production avoided by reduced energy demand in buildings. Such a fund could also be supported with seed financing provided under NAMA.*

ii. *Establish national regulation that makes energy efficiency investments mandatory in new buildings and renovations of existing buildings. Additional investment costs would no longer be optional and would be carried forward from the investment phase to the use phase in the form of increased building costs. These initial costs would be offset by reduced operational costs.*

iii. ***Allow Cap-and-Trade of emission reductions from buildings.** The funds generated by selling Certified Emission Reductions (CER) could be used to finance investments in emission reduction measures. CER are generated from building projects under the Clean Development Mechanism (CDM) but, due to the fragmentation of the sector and the technology specific focus of CDM, only a handful of building projects have generated CER. With common metrics for assessing GHG emissions from buildings, cap and trade schemes, based on the performance of buildings, could be established. (page 6)*

- **UK Carbon Trust**

In 2005 the UK Carbon Trust released a report: "*The UK Climate Change Programme: Potential evolution for business and the public sector".*

This document examined how to optimise policy instruments acting on business and the public sector to achieve significant carbon savings, while maintaining and enhancing UK companies' competitiveness.

One of its key findings was that:

*"'White certificate/baseline and credit' project style trading offers supplementary but limited options. These schemes require costly, complex verification and monitoring of individual projects, have lower impact as they focus largely on asset-related investments rather than*

*behavioural opportunities and, if Government pays for the credits generated, are less cost effective than alternative approaches. Placing obligations on energy suppliers to save energy amongst their business customers, particularly small and medium sized enterprises — 'Energy Efficiency Commitment for SMEs' — may help but delivery through such market-based routes is likely to remain modest and high-cost in this intractable market segment."* (Executive Summary, page 5)

Ultimately this report led to the UK Government's Energy White Paper (2007) in which the UK Government announced its intention to introduce the Carbon Reduction Commitment (CRC) Scheme.

This mandatory penalty-only scheme comes into effect in April 2010.

More recently, in December 2009, the UK Carbon Trust released a report "*Building the future, today"* which confirms that an urgent focus on the non-domestic building sector is needed and that buildings hold the key to meeting carbon reduction targets.

- **RAND Corporation**

In September 2009 the RAND Corporation – a non-profit organization that is one of America's oldest research institutes – released its study on what governments need to do to improve the energy performance of buildings: "Improving the Energy Performance of Buildings: Learning from the European Union and Australia".

The study was supported by the U.S. Real Estate Roundtable, and the U.S. Building Owners and Managers Association.

In the report, which "presents key insights that should be taken into account as the United States considers analogous policy approaches", the researchers focused on five key policy tools: building codes, energy efficiency ratings, the role of public buildings, the training and certification of experts, and the issuance of tradable "white certificates".

In their summary of key considerations for US policymakers they commend "a buildings-only cap-and-trade system in which owners of large buildings are given energy savings obligations that can be met either directly, or by buying certificates from better-performing buildings", noting that "such a system would provide more incentives for owners and users to operate buildings more efficiently".

The researchers' observations include the following:

*"White-certificate programs that mix sectors can be expensive to administer and, depending on the baseline case, can either reward investments that would have taken place anyway or require such large investments that they have limited uptake. Verification can also be an issue, especially in the case of the otherwise more cost-effective mass-default method. Commercial real estate may be sufficiently unique in terms of longevity of assets, diversity of building types, and financing and leasing characteristics to merit specifically tailored white-certificate/abatement programs such as* ***Australia's Efficient Buildings*** *(sic)* ***Scheme."***

- **Energy Efficiency in Buildings Project,**
  **World Business Council for Sustainable Development**

In April 2009 the 4-year, $15 million Energy Efficiency in Buildings project of the World Business Council for Sustainable Development released its landmark report, 'Transforming the Market', which provides the most comprehensive assessment of policy mechanisms to drive energy efficient buildings.

The Co-Chair of the project, William Sisson of United Technologies has said of the Efficient Building Scheme (EBS):

*"I think the EBS is rightfully positioned as a possible price signal element within a comprehensive buildings regulatory strategy that is needed to transform markets. That is, price signals driven by the EBS are important but must be combined with effective codes/enforcement, transparency, integrated design and technology, capacity/training, and mobilizing energy awareness. As we suggested in our WBCSD EEB work and transformation recommendations, price signals will be needed to inform the market of the real cost of energy and future cost of carbon, particular to the critically important buildings sector; and, as well act to limit rebound."*

- **United Nations Environment Programme's Sustainable Buildings and Climate Initiative (**UNEP SBCI**), the Marrakech Task Force on Sustainable Buildings and Construction, and the UNEP Finance Initiatives**

In Copenhagen in December 2009 an event entitled 'Construction Counts for Climate!' was held to specifically consider policies for a low –carbon building environment, and the importance of addressing the built environment in any response to climate change.

The event was hosted by the Government of Finland in the EU Pavilion inside COP15, and co-organized by the United Nations Environment Programme's Sustainable Buildings and Climate Initiative, the Marrakech Task Force on Sustainable Buildings and Construction, and the UNEP Finance Initiatives

In the words of the Finnish Housing Minister:

> "No government – let it be in an industrialized or in a developing country – can leave buildings out of its policy toolbox if it wants to save energy and reach serious greenhouse gas emission reduction targets."[1]

1. Finnish Minister of Housing, Mr. Jan Vapaavuori

UNEP DTIE's Director, Sylvie Lemmet, presented the new UNEP SBCI report *"Buildings and Climate Change - Summary for Decision Makers"* highlighting the opportunities for drastic emission reductions in the building sector and outlining a step-by-step approach to harnessing these opportunities. She also called upon the negotiators at COP15 to make the building sector count in the outcome of negotiations, and to put in place an agreement that will support emission reduction in the building sector at international, national and local levels.

Professor Diana Urge-Vorsatz, lead author for the buildings chapter in the 4th IPCC report, presented new research showing that the emission reduction potential in buildings is in fact much higher than was presented in the IPCC report.

*"*Every new building we build and every building we renovate has the promise to make or break a low carbon footprint for decades to come - this is an opportunity we simply cannot afford to lose," Professor Urge-Vorsatz said.

The chairman for UNEP SBCI's think tank on climate change, Mr. Stéphane Pouffary of ADEME (French Environment & Energy Management Agency), introduced the Common Carbon Metric, highlighting the importance of now finally having one common tool - a common language - in place to provide an internationally coherent and consistent method for measuring the climate footprint of buildings.

8. **Cap & trade V Baseline & credit**

Lend Lease

WSPLincolneScott Advanced Environmental

Freehills

Ms Maria Atkinson
Global Head of Sustainability
Lend Lease Corporation Ltd
30 The Bond
30 Hickson Rd
MILLERS POINT NSW 2000

maria.atkinson@lendlease.com.au

10 February 2010
Matter 1875433
By email

Dear Maria

**Safe Climate *(Energy Efficient Non-Residential Buildings Scheme)* Bill 2009 (Bill)**

I have reviewed the Bill.

In my view, the Bill seeks:

1 to establish emissions caps for classes of non-residential buildings (expressed as a ratio of GHG emissions per $m^2$ of floor space);

2 to create a mechanism for the issue of building efficiency certificates (**BECs**) within those caps;

3 to create a reporting regime for building efficiency for non-residential buildings;

4 to require the surrender of BECs in accordance with reported levels of building efficiency;

5 to implement penalties for failure to surrender sufficient BECs to cover those reported levels; and

6 to establish a system for transferring and dealing in BECs.

In my view, the Bill clearly envisages a cap-and-trade regulatory scheme based on BECs.

Yours sincerely

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## 9. The need for benchmarking: Carbon footprint of assets

In 2009 Lend Lease Corporation engaged a consultant to undertake carbon footprints of all assets within one investment portfolio.

The assets were studied as a total and also on a meter squared basis creating a method of comparing assets of different size. The assets were compared using both $kgCO_2$-e and kWh. This highlights any changes in trend that may occur due to the varying Electrical Emission Factors of different states across Australia.

As the tables below show quite clearly, without a benchmark against which to analyse the assets' performances, the data has little meaning or value.

**Commercial asset comparison**

Figure 1 charts the performance of the various Lend Lease commercial assets in terms of the amount of carbon dioxide equivalent emitted on an annual basis. Figure 2 charts the performance of these assets on an area basis to compare the assets in terms of energy efficiency.

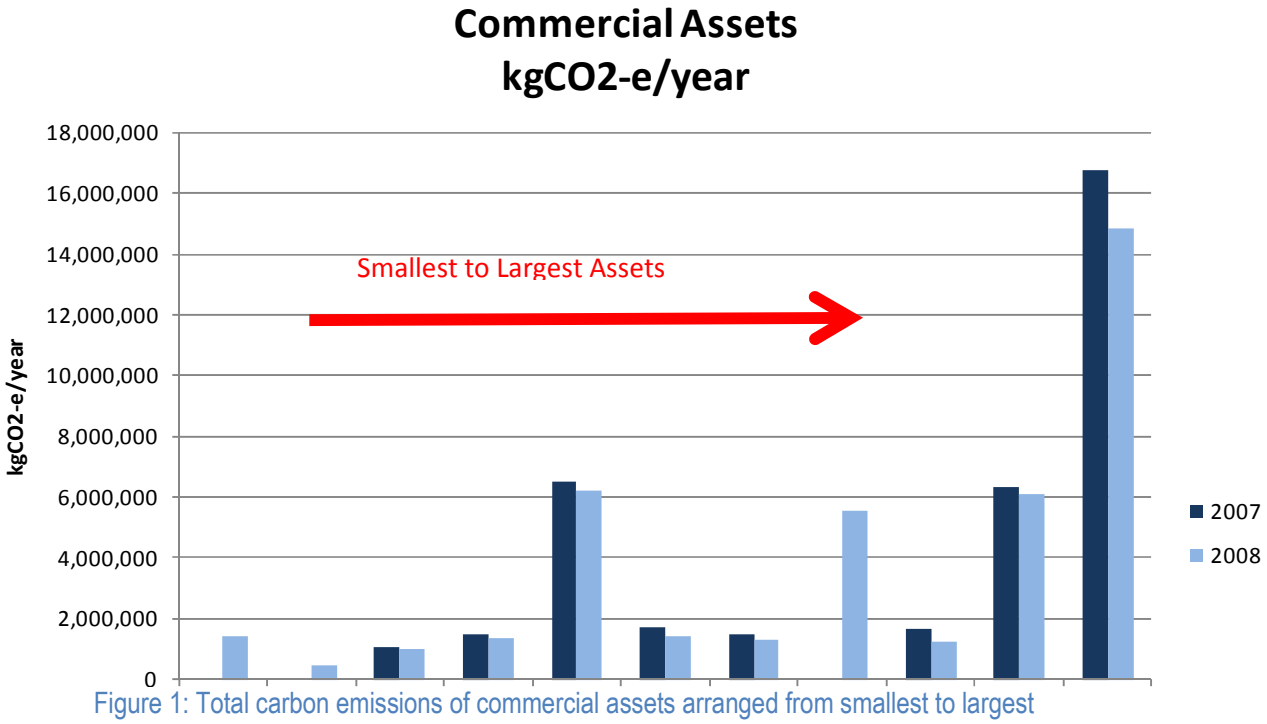


Figure 1: Total carbon emissions of commercial assets arranged from smallest to largest

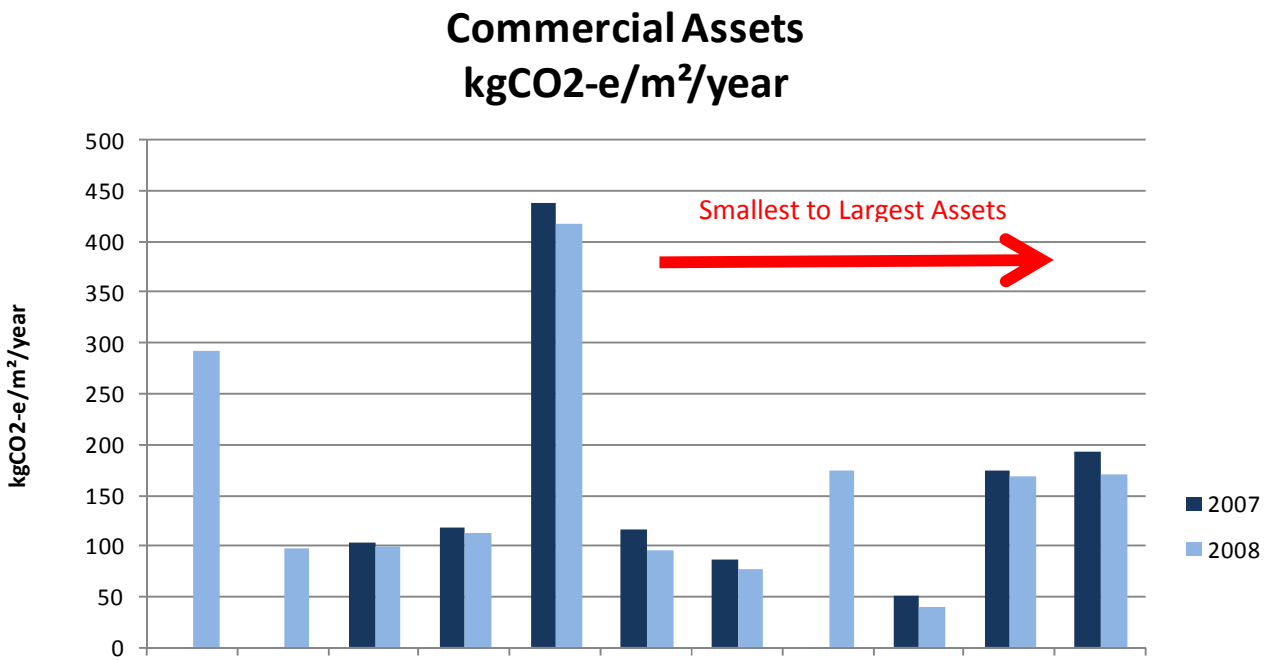


Figure 2: Carbon emissions per m² for commercial assets arranged from smallest to largest

and **Error! Reference source not found.** show the same results as Figure 1 and Figure 2 except in terms of energy consumption (kWh/year). These results show similar results compared with carbon efficiency. As such the commercial assets show little sensitivity to the Electrical Emission Factor differences between states. This is due to all the commercial assets being located in New South Wales, Queensland, and The Australian Capital Territory. All these states have the same Electricity Emission Factor, and as such will show no change in trend between carbon emissions and electricity consumption.

## 10. Complementary to other measures

| Measure | How the EBS will complement |
|---|---|
| Carbon Pollution Reduction Scheme (CPRS) | It will provide a price signal for the non-residential building sector.<br>It can operate alongside the CPRS without compromising it or requiring it to be re-designed in any way. |
| Mandatory disclosure of the energy efficiency of commercial buildings (& all other types of buildings) | The Scheme enables robust, meaningful data collection, and provides a benchmark against which to measure each building's performance. |
| An increase in the stringency of energy efficiency requirements for all classes of commercial buildings in the Building Code of Australia from 2010 | While this reform of the Building Code is necessary and supported, it will have little impact on existing buildings – except where they undergo a major refurbishment.<br>The Efficient Building Scheme will capture all existing buildings and incentivize energy efficiency improvements in them. |
| The National Greenhouse and Energy Reporting (NGER) Scheme | The NGER Scheme collects greenhouse data but this is not identifiable to particular assets/ buildings, nor does it provide a benchmark. Consequently, it does not provide meaningful information about each building's energy efficiency either to owners or Government.<br>The Efficient Building Scheme would therefore complement the NGER Scheme by making it more meaningful to both. |
| Energy Efficiency Opportunities (EEO) program | By enabling a building owner to accurately assess a building's individual energy performance and compare that to a benchmark, the owner can readily identify actions to reduce energy of the asset. |
| Australian Carbon Trust | We have been in discussed with Robert Hill who has expressed an interest in the data collection and benchmarking capacity of the Scheme to provide the Trust with a credible basis for the allocation of funds, as well as to verify their application. |
| Government fiscal incentives/ grant programs | It provides a credible basis for the allocation of government grants or fiscal incentives, by enabling governments to accurately measure a building's performance in relation to the benchmark. |

**1. A timeline**

| | |
|---|---|
| 2002 | Maria Atkinson & Ché Wall co-found the Green Building Council of Australia; Maria is appointed Founding CEO |
| 2002 | Ché is appointed Founding Chair of the World Green Building Council |
| 2002 | Tokyo Metropolitan Government introduces mandatory reporting & disclosure |
| 2002 | UK Government introduces Energy Efficiency Certificate (EEC) white certificate scheme |
| 2002 | NSW Government introduces GGAS white certificate scheme |
| 2005 | Tokyo Metropolitan Government tries & fails to introduce a mandatory cap & trade scheme. Starts process of stakeholder consultation. |
| Dec 2005 | The UK Carbon Trust released a comprehensive report which identified the potential for cost effective energy efficiency measures that were being missed – specifically for large non energy-intensive organisations. |
| March 2007 | UNEP SBCI *Buildings and Climate Change: Status, Challenges and Opportunities* – produced by UNEP's Sustainable Construction and Building Initiative (SBCI). The report stresses the importance of appropriate government policies on building codes, energy pricing and financial incentives that encourage reductions in energy consumption. |
| May 2007 | UK Government announces decision to implement CRC. |
| Oct 2007 | McKinsey global cost curve for greenhouse gas reduction notes that commercial building energy efficiency is the least cost abatement solution |
| 2008 | Tokyo Metropolitan Government scheme stops |
| January 2008 | Maria Atkinson & Ché Wall call for inclusion of the built environment in emissions trading schemes |
| January 2008 | Submission supporting introduction of Mandatory Disclosure of Energy Efficiency of Commercial Office Buildings |
| February 2008 | Submission re NGER Scheme – doesn't give benchmark - not useful |
| February 2008 | McKinsey released Australian cost curve for greenhouse gas reduction |
| May 2008 | Lend Lease, WSP Lincolne Scott and Advanced Environmental develop proposal for Emissions and Efficiency Trading Scheme – an ETS with an integrated component for energy efficiency |

| | |
|---|---|
| September 2008 | Lend Lease, WSP Lincolne Scott and Advanced Environmental amend their proposal, recognising that a complementary sector-specific emissions trading scheme for non-residential buildings would be a more simple, low-cost, effective approach. |
| 2008 | Tokyo Metropolitan Government announces plans for world's first cap&trade for buildings |
| Feb 2009 | Mandatory disclosure submission |
| June 2009 | Submission to UK DEFRA re CRC |
| 2009 | UK Government announces it is scrapping its white certificate scheme in favour of Carbon Reduction Commitment energy efficiency scheme – to start 1 April 2010 |
| April 2009 | World Business Council for Sustainable Development Energy Efficiency in Buildings report released: |
| September 2009 | Improving the Energy Performance of Buildings: Learning from the European Union and Australia", released by the RAND Corporation.<br>The report commends the Efficient Building Scheme to US policymakers. |
| December 2009 | UK Carbon Trust report released, *Building the future, today* |
| December 2009 | Maria is elected to Board of the US Green Building Council |
| December 2009 | Ché is appointed Chair of the joint World Green Building Council/ Sustainable Building Alliance to develop common carbon metrics for the sector |
| Jan 2010 | US priority on green refurb and renewable energy – Waxman-Markey |
| April 2010 | Tokyo Metropolitan Government cap & trade for buildings starts |
| April 2010 | UK Carbon Reduction Commitment Energy Efficiency scheme starts |
| April 2010 | Seoul cap & trade for buildings starts |

appendix

# Buildings hold the key to meeting our carbon targets

18 December 2009

"A" Grade energy rating must become standard for non-domestic buildings says Carbon Trust report.

For the UK to meet its national carbon reduction obligations Britain's commercial, industrial and public buildings need to improve from an average of an E energy rating today to C by 2020 and A by 2050 , according to a new report released by the Carbon Trust today.

"Building the future, today" confirms that an urgent focus on the non-domestic building sector is needed to keep the UK on track to deliver carbon reductions of 80% by 2050. Currently, 18% of the country's emissions can be attributed to the non-domestic building sector and these emissions have remained static for the last 20 years.

If the right strategy is followed, the carbon footprint of non-domestic buildings can be reduced by more than one third by 2020 and a net benefit of £4billion can be delivered to the UK economy through energy savings, the report finds.

Central to this strategy is the roll out Display Energy Certificates (DECs) and Energy Performance Certificates (EPCs) to all non-domestic buildings by 2015 to provide transparency of energy performance across the sector.

The Carbon Trust also proposes that all cost-effective energy efficiency measures, such as lighting and heating controls, must be implemented across all 1.8 million non-domestic buildings in the UK within the next ten years.

Beyond 2020, more costly measures – such as triple glazing and ground source heat pumps – must become standard in both new and existing buildings, alongside continued decarbonisation of the UK's electricity grid. Designers and developers of new buildings will need to take a more holistic and integrated approach, reducing energy demand by making better use of natural light and ventilation.

The scenario presented by the Carbon Trust requires urgent action and a clear sense of purpose. However, it also identifies barriers that must be overcome such as energy costs being seen as marginal by building developers and operators, non-compliance with building regulations and the landlord-tenant divide.

Stuart Farmer, Head of Buildings Strategy at the Carbon Trust and lead author of the report said: "Commercial and public buildings offer the UK a big bang for its carbon reduction buck. But it won't just happen on its own; energy efficiency needs to be the first and second priority. For policy makers and business, rolling out Display Energy Certificates to all non-domestic buildings must be the foundation stone to deliver not only better buildings, but better use of buildings too.

"Policymakers and business need to work together to capture this opportunity. Policymakers need to set a clear direction, show leadership and provide the necessary policy and regulatory support. In return, the building industry needs to respond by moving from niche exemplars of good practice to large scale, mass market implementation as standard."

'Building the future, today' sets out a strategy to reduce carbon emissions from non-domestic buildings by 35% by 2020. It also includes a range of policy options for policymakers to consider which the Carbon Trust believes will help catalyse the market into action by improving the quality of buildings and encouraging more energy efficient use of them by building owners and occupiers. These policy options include:

### Improved buildings:

- Tighten the Building Regulations to ensure all cost-effective carbon reduction measures are implemented in new builds and major refurbishments by 2020, including Zero Carbon new buildings by 2019.

- Implement a minimum building standard to ensure almost all non-domestic buildings achieve an F-rated EPC or better by 2020.

- Show public sector leadership by ensuring that large public sector buildings implement all cost-effective measures recommended in DEC reports within the seven year lifetime of the report.

- Launch a hands on advice and support service for owners and users of F and G-rated buildings to help accelerate improvements.

- Tighten the Carbon Reduction Commitment (CRC) cap to incentivise businesses to take up cost-effective energy efficiency measures.

- Develop a national programme led by the energy suppliers to install simple, low cost energy efficiency measures in SME buildings.

### Energy efficient use of buildings:

- Tighten the Carbon Reduction Commitment (CRC) cap to incentivise businesses to take up cost-effective energy efficiency measures.

- Develop a national programme led by the energy suppliers to install simple, low cost energy efficiency measures in SME buildings.

The findings of the Carbon Trust report have been welcomed by key players in the buildings industry and environmental groups: Paul King, Chairman, UK Green Building Council, said: "The government has put some excellent carbon reduction targets and policies in place for new homes and buildings. But so far we have collectively failed to grasp the scale of the opportunity - in terms of innovation, investment, efficiency, jobs and benefits to occupiers - of radically improving our existing non-domestic buildings. To achieve the carbon reductions we need by 2020 and beyond, we need to start today, and embrace a revolution in energy efficient refurbishment."

Neil Bentley, Director of Business Environment, CBI, said:

"Businesses are keen to take big steps to reduce energy and carbon emissions from their buildings. However many businesses, like homeowners, face major barriers in finding the capital to invest in energy efficient measures such as energy management systems, efficient lighting and heating systems. The Government needs to work closely with business to provide the right incentives to help overcome the upfront costs."

John Sauven, Director of Greenpeace said: "Buildings are responsible for a massive 44% of our CO2 emissions. It is clear that climate change cannot be tackled in the UK unless energy use in our homes and commercial buildings is massively reduced.

"The transformation of our buildings has many benefits. It will reduce emissions, improve energy security, and save energy. It will provide jobs and many local benefits. And it is key to meeting our climate change targets. This report from the Carbon Trust, calling for non-domestic buildings to improve their energy rating from an average E today to A by 2050, will be key if we are to decarbonise our economy."

## 2. Personal biographies

### MARIA ATKINSON

**Maria Atkinson, Global Head of Sustainability, Lend Lease Corporation Limited.**

Maria's industry leadership is internationally recognized, particularly as an advocate of a simple, cost-effective solution to drive deep, fast emissions reduction in the real estate and construction sector. This is reflected in her various Board and Committee appointments, as well as the numerous invitations for her to participate in influential forums, including: her election as Board member of the US Green Building Council, Chair of the United Nations Environment Programme - Sustainable Buildings & Climate Initiative and Co-Chair of the World Economic Forum's Global Agenda Council on the Future of Sustainable Construction; she was a delegate to Prime Minister Rudd's Australia 2020 Summit in the 'Sustainability and Climate Change' stream; in 2007 former US President Bill Clinton invited Maria to join a high-profile panel to discuss ways to accelerate green buildings, as part of the Annual General Meeting of the Clinton Global Initiative in New York; and she was also a Master Speaker at the US Green Building Council's 2007 Greenbuild Conference in Chicago.

Prior to re-joining Lend Lease in February 2006, Maria co-founded the Green Building Council of Australia and become the organisation's founding CEO, with the mission of driving the shift to a sustainable property industry in Australia. By the time she left in February 2006, to take up her global appointment at Lend Lease, Maria had firmly established the Green Star environmental rating system as the national industry standard for green buildings, and both the organisation and Maria were recognised as the country's leading authority on green buildings. Maria was a Director of the 'Green Building Council of Australia' until January 2009 and remains a Life Fellow of the organization.

From 1997 to 2002 Maria was responsible for environmental management at Bovis Lend Lease Australia; she was also the project Environment Manager for the Sydney 2000 Olympic Village and the Homebush Bay Hotel developments - projects which have received international recognition for setting new benchmarks in environmental best practice for the construction and real estate sector.

Directorships/Memberships:

- Chair of the 'UN Environment Programme Sustainable Buildings & Climate Initiative' and member of its 'Climate Change Think Tank'
- Co-Chair of the World Economic Forum's 'Global Agenda Council on the Future of Sustainable Construction'
- Member of the Singapore 'Building and Construction Authority's International Panel of Experts for Sustainability in the Built Environment'
- Member of the US Green Building Council Board
- Member of the 'Australian Building Codes Board' representing 'Industry'
- Director of the not-for-profit 'Banksia Environmental Foundation'
- Member of the City of Sydney 'Design Advisory Committee'
- Member of the New South Wales State Government Climate Change Council
- Member of the Australian Government's 'Department of Climate Change and Climate Adaptation Flagship Stakeholder Advisory Group'

## CHE WALL

### Managing Director
WSP Lincolne Scott Pty Ltd

### Director
Advanced Environmental

### Co-Founder
Green Building Council of Australia Ltd

### Founding Chairman
World Green Building Council Incorporated

### Awards
2008 Green Building Council of Australia Life Fellow Award

2007 Building Services Journal (UK) Sustainability Champion of the Year

2006 Australian Financial Review BOSS True Leader

2004 Prime Minister's Environmentalist of the Year

2004 National Exemplar ING Real Estate YBE Towards Sustainable Communities

2002 RAIA President's Award for Outstanding Contribution to the Architectural Profession

Ché Wall is Managing Director of the WSP Lincolne Scott group of companies.

Ché is internationally recognised as one of the world's leading green building practitioners and advocates, with a raft of award winning projects to his name.

Ché was the founding Chairman of the World Green Building Council from 2002 to 2007, during which time he oversaw the formation of Green Building Councils in China, the United Arab Emirates, the United Kingdom, Mexico, Germany and New Zealand. Ché is also responsible for the formation of the Green Building Council of Australia.

Ché has proven expertise in the area of sustainable design and construction practice, including such award winning projects as:

### Office

- 30 The Bond, Sydney NSW
  *Property Council of Australia, Rider Hunt Award 2005*
  *RAIA Commercial Building Award 2005*
  *RAIA Energy Efficiency / ESD Award 2005*
  *Green Building Council of Australia, 5 Star Green Star – Office As Built Certified Rating* 2005
- CH2, Melbourne VIC
  *CIBSE Sustainable Building of the Year Award 2007*
  *Green Building Council of Australia, 6 Star Green Star- Office Design Certified Rating 2005*
  *CRC Construction Innovation, Year of the Built Environment 2004*

### Arts

- Scottsdale Forestry Centre, Launceston TAS
  *RAIA Sustainability Award 2003*
- NIDA Stage 2, Kensington NSW
  *RAIA Sulman Medal 2002*
  *AIRAH NSW Excellence in HVAC 2004*
- Pavillions, Sydney Showground, Moore Park NSW
  *RAIA NSW Chapter ESD Award 1999*
  *RAIA Energy & ESD National 1999*
  *RAIA Sulman Medal 2002*

### Education

- Birabahn, University of Newcastle NSW
  *RAIA Sir Zelman Cowen Award 2003*
- Life Science Building, University of Newcastle NSW
  *RAIA Sulman Medal 2001*
  *Francis Greenway Society Gold Medal 2001*
- Nurses Faculty, University of Newcastle NSW
  *RAIA NSW Chapter ESD Award 1998*
  *MBA National Energy Efficiency Award (Commercial) 1998*
- Stage 1 buildings, Charles Sturt University Thurgoona NSW
  *RAIA ESD Commendation 2000*
  *MBA National Energy Efficiency Award (Commercial) 2000*
  *Master Builders Ass National Resource Efficiency Award (Commercial <$20m)*

### Sport

- Dunc Gray Velodrome, Bankstown NSW
  *RAIA NSW Energy Award 2001*
  *RAIA Energy & ESD National Award 2001*

### Other

- Southern Cross Station, Melbourne VIC
  *Royal Institute of British Architects Lubetkin Prize 2007*
- Hawaiian Energy Gateway Centre, NELHA, Hawaii
  *US Green Building Council, LEED Platinum*

Ché has authored many articles on the subject of sustainable design and policy for journals and frequently presents papers on the commercial application of sustainability at local and international forums including keynote and plenary addresses at:

- Think 08, London UK 2008
- Green Cities, Sydney NSW 2007
- 2nd International intelligent and Green Technologies Conference, Beijing, PRC 2006
- 1st International Congress + Expo 'Sustainable Building', Monterrey Mexico 2006
- Subtropical Green Building International Conference, Taipei Taiwan 2005
- Green Building Congress, Hyderabad India 2004