

# WORLD VIEW

ISSUE 10

## A GLIMPSE OF A SUSTAINABLE FUTURE

- CITIES - A MODEL FOR LOW-IMPACT LIVING
- THE SUSTAINABILITY AGENDA IN THE US



# WELCOME

From Stuart McLachlan,  
Global MD for  
WSP Environment  
& Energy



*Public and private  
collaboration is  
essential to achieving  
a low-impact lifestyle*



Welcome to our latest edition of 'WorldView' – a publication designed to inform and share ideas with our clients and business associates all over the world.

In this edition we assess the challenges and opportunities that emerge from adapting to climate change. And let's be clear, this isn't just about managing carbon emissions. This is also

about issues such as water scarcity and the overall need for a lifestyle shift.

We need to recognise that central and local government, business and individuals and communities, all need to collaborate to generate change.

As an example I bought a new bike to reduce the impact of my 32km round trip commute. That's one of my personal commitments – I got on my bike. But I'm reliant on the government's investment in safe cycle paths, a £140m UK investment, dwarfing my personal investment, but it's a partnership. The city creates the infrastructure for the future, and individuals make a personal commitment to change.

Similarly we are excited to have made a commitment to organise a conference hosted by Alex Salmond, the First Minister for Scotland, and attended by EU ministers, to discuss the way forward for a European off-shore grid. Governments are realising that they need to facilitate and fund infrastructure that will allow private sector investment in renewables.

These collaborations also extend out to public and private sector partnerships that help deliver new waste recycling plants; to local government attracting corporate businesses by adopting sustainability strategies and principles that match those of leading companies; to venture capitalists investing in new clean energy technologies that ultimately help us to live a low impact lifestyle; and a list that could stretch on and on.

It's a complex web of partnerships, but they are vital to driving legislative change, securing funding for new technologies, creating jobs, and ultimately delivering change in all aspects of life. As you'll read in this publication, we believe the world has the technological capability to adapt. We just need to ensure we all have the commitment.

**Stuart**

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# A GLIMPSE OF A SUSTAINABLE FUTURE



The depletion of natural resources and our changing climate require us to adapt with a level of change that will transcend all aspects of our lives: from our cities, to trade, commerce and lifestyle choices.

Our Governments are busy creating international agreements and policy frameworks to shape our future, but there has been little articulation of this physical and practical vision at an individual level i.e. how will this affect 'me'?

In this edition of 'Worldview' we explore just that vision to understand where and how we live, do business, communicate, travel and consume in a low-carbon society.



Our global teams at WSP argue that while change is needed for a sustainable future, it does not mean an end to the comforts of modern living. For better or for worse our inherited human traits include a desire to progress technologically and explore our planet. To attempt a reversal in the development patterns which have led us to live in cities, travel more and benefit from technology, is unrealistic.

Our view is that a low-carbon revolution will bring unprecedented opportunity for business; will be uniquely governed by international cooperation; and will be delivered together by an enlightened society and an economy where companies are actively engaged in sustainable development goals.

Ultimately our economy must be 100% renewable so that there is no further depletion of the earth's resources. In this future, consumption and disposal will be entirely cyclical, as is nature, rather than driven by the linear and exploitative model of extract, use and dispose. We will live in urban environments that mimic nature's processes, and businesses will trade carbon on a global market.

Demand for traditional energy sources must be reduced dramatically and investment in clean and efficient supplies of energy is crucial. However, in other aspects of our lives, inspired technological design can help us to enjoy the benefits of a low-carbon lifestyle without the lights going out.

Turn over for our glimpse into the future – what will it mean for our urban, business and individual environments by 2050?

# Continuing our lead article: how will we live, work and socialise in a future low-carbon world?

## Where we live

Envisioning a future low-carbon world was precisely the brief that our global team received from the Foreign & Commonwealth Office in Shanghai in 2009. We were asked to assist the British Government in a knowledge transfer project to identify low-carbon models for city developments in China. Our study focused on the industrialised and high-growth city of Cixi in the Zhejiang province as a typical, model project.

We believed that Cixi could become more compact, developing around key public transport nodes. We set out how a sustainable infrastructure could be developed to share heat and cooling throughout the year on district loops fed by district energy centres located near where the demand was being generated. We also set out how the government could raise revenue from prudent low-carbon investments to fund a wide range of high quality civic improvements that enriched the quality of life for residents and attracted visitors.

Peter Sharratt, WSP's Global Director of Sustainability & Climate Change, helped shape the vision for Cixi. He argues that our cities will change for the better. Cities will be quieter: the traditional bustle of the Central Business District will be tempered by the influx of mixed-use and residential housing, blurring the gap between professional and personal spaces.

People will move into communal blocks which will respond to family needs – the number of rooms could be reduced when the children move out, or increased when the grandparents move in. These buildings will be responsive to stringent design standards: not only will they use significantly less energy, but they will be 'energy positive', generating more than they need as part of the drive to reduce personal emissions. "Our buildings will twinkle, and reflect the energy systems used to power them" he says. The concept of a '500-year building' becomes a reality if we get the basics right, extinguishing the need for constant re-development.

From a policy perspective, as commitments to global environmental treaties and objectives gain momentum, the rate of transformation in national social policy will increase. This is the view of Sean Doel, Technical Director in our South African business and Editor of Simply Green, who says that in countries such as South Africa, policies that are already being formulated in response to climate change will become the major drivers for addressing issues such as flooding and housing for poorer communities.

## How we work

Andrew Armstrong, Executive Vice President in our US business, argues that, as telecommunications develop, the workplace will become any venue where colleagues can use 'collaborative technologies' to connect to one another. The traditional office space will change: there will be fewer desks and more space available for face-to-face interaction and video-conferencing. Already, prototype e-work facilities can be rented hourly and daily, providing workers with an alternative to commuting into city centres or having offices at home. Recently launched in Amsterdam, Smart Work Centres offer state-of-the-art networking technologies with other amenities – flexible workstations, conference rooms, lounges, a restaurant/business club and a childcare centre.

London-based global Director, David Symons, points out that in order to meet the 2050 EU goals of 80% reductions in carbon emissions, businesses will have to revolutionise their business practices. "In a carbon constrained economy, both consumers and suppliers alike will be incentivised to engage with low-carbon, energy-efficient manufacturing processes, commodities and production lines. With the right government support, businesses will be encouraged to filter out energy-rich business practices from their operations."

In addition, Dan Dowling, a London-based global sustainability specialist, says that salary and reward packages could be impacted by personal carbon use. He notes this is already the case for some global business leaders in their corporations, and he speculates that a universal carbon currency could emerge in parallel to our financial systems.



A technological revolution  
will enable change

#### How we live

An equitable distribution of carbon emissions will require Europeans to reduce their footprints ten-fold and North Americans double that. This need will stimulate technological innovation as well as behavioural change to find less impactful ways to live while still enjoying the benefits of modern life.

Many aspects of modern life will remain essentially unchanged. Dan Dowling argues, for example, that in reality we won't stop travelling abroad although we might cut back whilst a low-carbon solution is found. Rapid, long distance travel will therefore continue to be a part of our lives, though it will be imperative for us to de-carbonise it. In future our choices will be driven by resource availability and carbon constraints rather than wealth, status or power.

Peter Sharratt predicts that we will track and manage the sustainability of our lifestyles through online resource monitoring portals. Instant access to information will guide lifestyle decisions, ensuring we don't 'spend' carbon or water savings made from one choice on something that is more energy intensive, ultimately increasing our impact on the environment. An online account of personal carbon and water use will enable us to make instant decisions about our day-to-day energy needs; view and arrange transport options such as car-sharing or car-pools; share ideas for low-impact entertainment; and even trade our own locally grown produce with someone else in our community.

Energy efficiency will continue to be reflected in the design of domestic products. John Gertsakis, Senior Sustainability Associate in Australia, says: "Carbon efficiency and functionality will be determinate in the aesthetic design of future products – we will all be far less materialistic as a result."

Goran Werner in our Stockholm office comments that if hybrid and electric cars are the norm in the future, our cities, towns, freeways and autobahns will have 'swap stations' readily available for motorists at service stations, garages, supermarkets etc. Here you will 'swap' your electric battery for a fully charged one, essentially renting battery life: "Solutions such as these are so obvious when you take a step back".

#### Essential and achievable

The impact of climate change is undeniable and inevitable, but our experts believe successful adaptation is possible. With the use of technology, policies and, above all, by working together, living in a climate changed world can be reasonable, probable, rational, and therefore achievable.

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# THE SUSTAINABILITY AGENDA IN THE US



The US is in a state of flux on climate change. A Climate Change Bill has been passed by the House of Representatives; industry is waking up to the commercial opportunities presented by sustainability; and the American public is increasingly concerned about the state of the environment.

At WSP we have identified two notable trends emerging in respect of America's focus on climate change. A combination of global forces is creating a 'perfect storm' that will dramatically alter the make-up of the US energy sector; and the business world is awakening not only to the risks presented by climate change, but to the new market opportunities from an emerging low-carbon economy.

## Perfect storm for the energy sector

Evan Evans, Vice President at WSP, identifies 3 global forces set to change the face of the energy industry in the US:

- Sustained high oil prices
- Energy independence
- Climate change

Evan points out that despite the price of crude oil dropping in 2009 to about \$60 a barrel from highs of \$140 in 2008, analysts believe that its price will continue to rise in the future, as readily

recoverable reserves become depleted and demand grows in direct response to a rebounding global economy. This is causing acute concern amongst businesses and government who are increasingly aware of the impact of long-term price rises on the US economy.

At the same time there has been a growing domestic realisation that the US has become increasingly dependent on the importation of foreign oil. With rapidly diminishing domestic reserves there are growing pressures within America to secure access to clean and bountiful

energy sources and end the reliance on foreign energy imports.

Finally, climate change is beginning to influence the US from a political, economic and social perspective. Concerns around the US's significant contribution to climate change and the escalating impacts of rapidly developing nations such as India and China are finally producing significant pressure for change.

Put together, these forces constitute a perfect storm that will introduce irrevocable changes to the US energy sector...

### So what does this mean for the energy sector in the US?

Firstly, legislative change is on its way. The Obama administration has introduced a Climate Change Bill that will fundamentally transform the way America produces and consumes energy. Although one of Obama's flagship policies, the Bill is facing predictable challenges as it passes through Congress. The US Senate remains deeply divided on the issue, with Republicans and lobbyists for traditional sectors such as heavy industry and farming determined to force significant concessions to the Bill.

Chris Jones, Executive Vice President at WSP, states that the US "is a market of polar opposites" with progressive states such as California and Washington adopting leading edge policies on climate change, whereas more conservative states, particularly those whose economies rely heavily on extractive industries or traditional manufacturing, are still fundamentally opposed to any changes which are perceived to increase the burden on their already beleaguered economies. However, WSP believes that this Bill will be

passed in the next 12 months and will drive fundamental alterations to the energy industry, albeit perhaps not to the extent hoped for by some observers.

The inclusion of Cap and Trade legislation in the Climate Change Bill will be one of the key driving forces for change in the energy sector, as it will raise significant government income for investment in clean new technologies, such as wind power and advanced solar photovoltaics. At the same time, Evan Evans suggests that heavy emitters, such as the electric utility industry, will be hit hard and it will be economically unviable for energy producers to maintain current activities without aggressively adopting renewable and clean technologies. Utilities will therefore need to be at the forefront of investment in Smart Grid, demand-side energy efficiency, and plug-in electric vehicles; in renewable electricity generation; in a variety of technologies that capture carbon from stack gases and store it; and technologies that actually remove carbon from the atmosphere.

Secondly, the adoption of economy-wide emissions legislation will provide the certainty and scale required to make the carbon markets an attractive place for mainstream investors. The emergence of new technologies offers tremendous potential for venture capitalists, as utilities look to new methods of financing and producing clean energy. Venture capital was integral to the initial stages of wind energy technology development, and is now looking at many emerging renewable energy technologies including hydro-kinetic power technologies such as ocean wave, ocean current and river current. Similarly, Evan points out that with US dependence on coal, bio-sequestration and chemical sequestration of carbon are also being eyed as significant commercial opportunities for venture capitalists.

Working in combination, business and government will drive significant changes to the energy sector; and although the final outcome of this process is unknown, the perfect storm will mean the energy sector never looks the same again.



Corporations are reaching a threshold where drivers for change are materially important

#### Implications for US business

Chris Jones believes that American companies must rapidly move beyond the risks presented by climate change and focus their attentions on securing competitive advantage in the emerging low-carbon economy.

Evan Evans suggests that large US corporations are facing the triple threat of increasing shareholder resolutions directly related to climate change, imminent climate protection legislation in response to global and domestic pressures, and increasing costs as a result of climate change. The US business sector has reached a threshold where these drivers are now materially important enough that they are being forced to respond.

Companies in the consumer products markets must adapt as US consumers become increasingly concerned about their impact on the environment. Evan cites Du Pont, the science-based products and services company, which adapted to become more sustainable after significant consumer pressure. Only after the implementation of GHG emissions mitigation initiatives did senior executives fully understand the commercial benefits to their business model.

Andrew Armstrong, Executive Vice President at WSP, notes that companies can secure commercial advantage from the environmental agenda through

adoption of new technologies linked to business process development. For instance, technologies from companies such as Cisco are already enhancing the way organisations and individuals communicate with each other, reducing the need for emissions-intensive business travel. Adapting to these new environmentally-led opportunities is a growing market that is bucking the current economic downturn and enables organisations to differentiate themselves and drive operational efficiencies.

#### Window of opportunity narrows

The US has a narrowing window of opportunity to take a leadership role in the new low-carbon economy. With the country's natural appetite for innovation and risk, the US is well placed to step up to this challenge. However, business alone cannot be the catalyst for change and economy-wide regulation will be needed to level the playing field and provide US businesses with the certainty they need to adopt aggressive competitive strategies for this emerging market space.

This window won't be open for long, as regulatory-driven Europe has a head start in developing commercially scalable clean/renewable technologies, whilst the Asian market is rapidly configuring to be a leader in this space. The time for America to take the lead is now.

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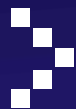
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*Cities have always competed with one another and the new differentiator is sustainability*



# DELIVERING SUSTAINABLE CITIES

**‘Cities can and must become the most environmentally friendly model of inhabiting our earth.’ That’s the view of our sustainability specialists at WSP.**

However, with a long history of damaging the environment and impacting on health, and with predictions that cities will hold nearly 5 billion inhabitants worldwide by 2030, the development and re-configuration of cities to be sustainable is more important than ever.



Masdar City, Abu Dhabi – WSP developed the integrated infrastructure strategies in the concept masterplan.

At a global level, this realisation is beginning to sink in. Whether Copenhagen delivers an international commitment to emissions reductions or not, individual countries are being forced to set targets for their own carbon emissions and be responsible for both national and regional policies to implement change. As cities account for 75% of the world’s energy, a growing number of policies around the world are being devoted to dealing with city consumption. WSP’s Prashant Kapoor explains that this is not enough, however, to create immediate change. Cities are complex and

operate as independent and interdependent systems and so the solutions for sustainability must also be multi-dimensional, including legislative, voluntary and market-based solutions supported by extensive awareness, consultation and community level action.

#### **Global principles**

Across global WSP offices, key voices hold that guiding principles at policy level are at the heart of true sustainable urban development. Dan Dowling believes that a “set of democratically agreed global principles would be helpful for

urban sustainability to flourish.” These principles would provide the guidance and flexibility for delivering sustainable cities, without compromising local needs. Simon Clouston, from WSP in the UAE, suggests that sustainable urban development frameworks are now becoming an essential for cities that are future-proofing themselves. Though still open to debate, national and regional frameworks should reflect these principles to drive the future of sustainable urban development.

### Interaction at national and regional level

Strong national policies must also allow for regional differences. Critically, cities have characteristics that will motivate them to act in different ways, notably:

- **healthy levels of independence**
- **a strong desire to differentiate**
- **unique historical context**

Policy flexibility will ensure that city mayors and Regional Development Agencies can address these challenges without the constraints of blanket legislation. Dan Dowling highlights the importance of clear interaction between regional/city frameworks and national policies, while Goran Werner, from WSP's team in Sweden, states that this flexible approach has always been used in Sweden. The Swedish Government has invested heavily in local infrastructure to ensure energy efficiency while individual cities such as Stockholm have been able to develop their own sustainable city frameworks independently of government intervention.

Also key to successful and sustainable cities are long-term visions and leadership commitment. Due to the extended lifespan of infrastructure and buildings, it will take time for a city to evolve into a sustainable low-carbon economy, says Dan Dowling. The ability of local authorities and city mayors to affect change in their cities through effective leadership will, therefore, be critical. Enrique Peñalosa, the former mayor of Bogota in Columbia, is responsible for numerous changes to raise levels of urban sustainability without affecting building infrastructure. Restricting private car use within the city and prioritising public spaces - by building hundreds of kilometres of sidewalks, greenways and parks - has had the dual effect of creating a greater sense of community, while delivering sustainable living options for citizens.



20,000 people will move to Jiangsu province in China – WSP is involved in the sustainability strategy for expansion.

### Facilitating change through business

But clear government strategies and strong leadership are not all that is required for functional sustainable cities. As Peter Sharratt, WSP's Global Director of Sustainability and Climate Change, points out, "You need to allow the market to partner in adopting solutions, otherwise you end up with government subsidies or incentivisation schemes that are ill-conceived."

Business plays an essential role in making sustainable cities commercially viable. Large-scale projects can generate significant economic risks if not supported by attractive incentive schemes. Investments into infrastructure, funded by local government, will act as a catalyst for new business activity, but public and private sectors will need to work together to deliver everything from waste recycling plants to new transport networks. Opportunities exist for Energy Service Companies (ESCOs) and Multi-Utility Services Companies (MUSCOs) to partner with Local Authorities to generate locally sourced energy in order to meet local needs. This business/government partnership is the most cost-effective and efficient means of delivering sustainable cities.

### Sustainable reputations

Cities will also have to accommodate business interests, as large corporates will favour cities whose sustainability standards reflect those of their own brands. Prashant Kapoor states that this is already the case in Helsinki, to which Nokia is inextricably linked. Cities will therefore have to consider their appeal and match their sustainability strategies with corporate business standards. In fact, urban sustainability practices present themselves as a new inter-city differentiator and source of competition between cities, globally.

### Harnessing the power of the community

Engaging the general public is as important as engaging the business community. As Dan Dowling puts it "You need to mobilise government and business but also the power of the people through community action to ensure that they feel responsible for the sustainability of their cities." Part of this engagement will be state driven, but local people will also engage independently; Dan notes that this is already taking place across Europe. Peter Sharratt believes that the battle of the future will be changing 'individual behaviours in a permanent way to create a low to no carbon economy and society' and there will be no more important a battle than the way in which cities are used, developed, and run. Individuals must therefore be encouraged to get involved in this process.

### Need for collaboration

The development of sustainable cities is beginning to happen. To be adopted worldwide there needs to be an effective collaborative approach, which includes national government, local government, leading city mayors, businesses, and the communities themselves. Peter Sharratt summarises the process: "The market and local communities can provide a certain amount of the answer; clear and strong regulation will do the rest."

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# BIOREMEDIATION

## UTILIZING BACTERIA TO DESTROY TOXIC CONTAMINANTS



By John Simon,  
Executive Vice President in our US business

**A surge in advanced technologies related to bioremediation has expanded this particular market. Many new vendors have entered the field. But a lack of understanding on how and when to apply bioremediation technologies can sometimes leave clients feeling sold short by a vendor's sales pitch.**

**With our extensive expertise in remediation, we've been tracking developments in bioremediation and other in situ cleanup technologies.**

Cleanup of soil and groundwater contamination from prior industrial operations historically involved mechanical processes such as pumping and treating groundwater or excavating soil and trucking it to an offsite landfill for disposal. However, environmental professionals have developed new and innovative techniques for treating chemical contamination without having to remove the contaminated material. One of the more interesting techniques is using bacteria to 'bioremediate' contaminants.

Bioremediation involves either promoting the growth of existing microbes or, if necessary, by adding specialized cultures of microbes. The technology is generally applied by injecting bioremediation solutions with nutrients and/or microbes into the ground ('in situ' applications) although it can also be used to treat excavated soil or groundwater pumped from the ground at the ground surface ('ex situ' applications).

Although bioremediation has been used for hazardous site cleanups for over 20 years,

there has been a recent surge in advanced technologies related to bioremediation. Remediation professionals have borrowed techniques from the medical and other highly technical professions to enhance bioremediation with astounding success. These advanced technologies include genomic testing (DNA testing), radio-labeled isotopes, and specialized sampling equipment.

These advanced developments have resulted in an expanded market with many new vendors entering the field. Many environmental professionals did not have the opportunity to study these advanced technologies during their secondary education and, therefore, are at a disadvantage when it comes to evaluating how and when to apply bioremediation. This lack of understanding can force environmental professionals to rely on vendor-supplied information, which may not be 100% objective.

At WSP we have been tracking developments in remediation for over 15 years and have noted many lessons learned in the industry that will ensure clients avoid misapplications of bioremediation due to a vendor's sales pitch.

### **Optimizing bioremediation**

Properly designing a bioremediation project requires a thorough understanding of the site contaminants, geology, and microbial ecology (what types of bacteria are present).

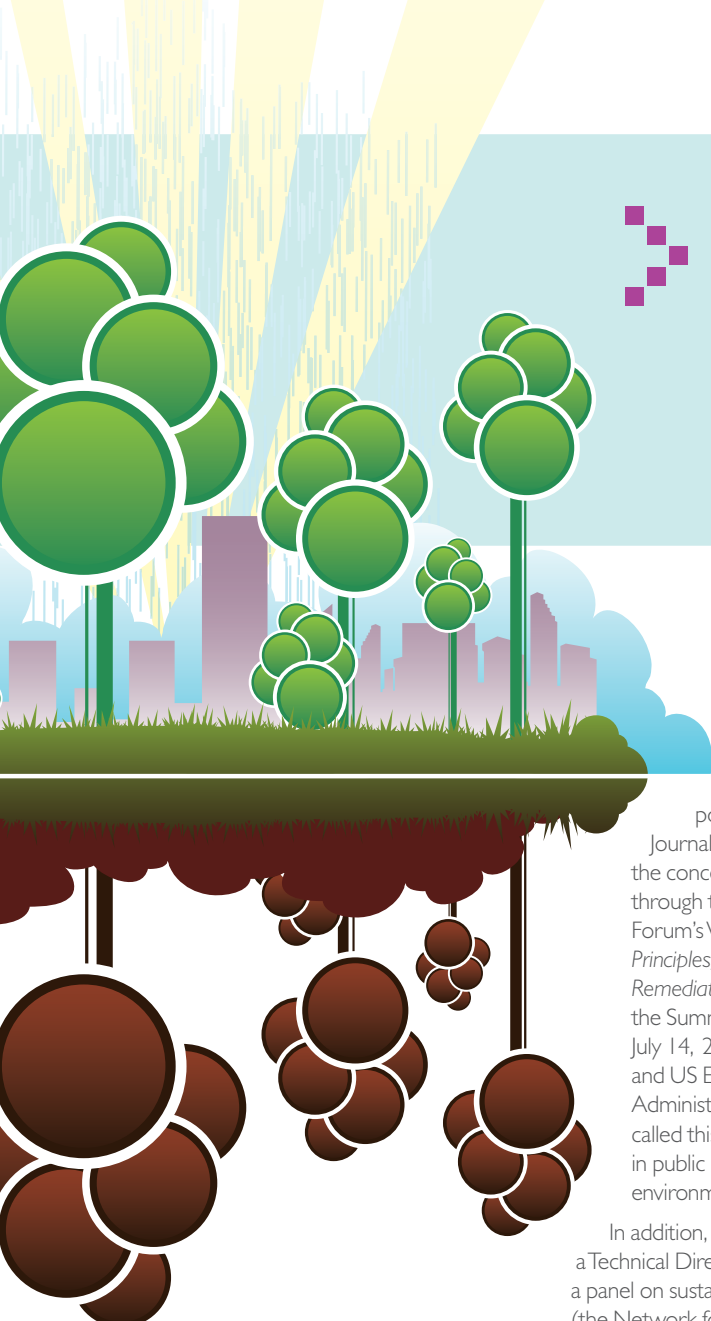
Many practitioners suggest conducting bench-scale tests to simulate the application of bioremediation. This involves extracting soil cores and groundwater and then testing bioremediation in a laboratory. These tests are very difficult to conduct since the condition of the soil and groundwater are altered during the extraction and test setup. Instead, WSP

promotes the use of a less expensive, innovative 'in well' test. This test uses specialized beads, called Bio-Sep® beads, set in perforated tubes. The tubes are simply lowered into a well, allowing groundwater to flow through the tubes and around the beads.

The types of tests run using the beads are somewhat complicated to explain in a short discussion, but include genomic testing at the DNA and enzyme level to identify whether the appropriate bacteria are present and, if so, if they are active. WSP also studies the geochemistry to ensure that the aquifer conditions will support bioremediation. Based on the information gathered, WSP will then determine the type of bioremediation solution to use and whether to add bacteria to the aquifer.

In addition to DNA-type tests, we also advocate employing isotopic tests to determine if the contaminants are present in a degraded state. This provides useful information regarding whether any type of active bioremediation is necessary or if the contaminants can be expected to continue to degrade naturally (a concept called natural attenuation). Both isotopic testing and genomics can be used to help convince regulators that bioremediation or natural attenuation is appropriate for application at a site.





## The concept of sustainable remediation is gaining traction worldwide

situ bioremediation is considered a sustainable remediation technology.

WSP has the distinguished position of editing the 'Remediation Journal'. This journal recently promoted the concepts of sustainable remediation through the US Sustainable Remediation Forum's White Paper, *Integrating Sustainable Principles, Practices, and Metrics into Remediation Projects*, which was published in the Summer 2009 issue of Remediation. On July 14, 2009, former New Jersey Governor and US Environmental Protection Agency Administrator, Christine Todd Whitman, called this white paper: "a watershed event in public policy deliberations about environmental remediation."

In addition, my colleague Dr. Sarah Mackay, a Technical Director in our UK business, chaired a panel on sustainable remediation at the NICOLE (the Network for Industrially Contaminated Land in Europe) conference in June 2009. NICOLE is a leading forum on contaminated land management in Europe, promoting co-operation between industry, academia and service providers on the development and application of sustainable technologies.

One of the obvious tenants of sustainable remediation is implementing in situ technologies, which tend to have considerably lower environmental, economic, and societal footprint than mechanical technologies. Therefore, as the regulatory and regulated communities grasp the importance of sustainable remediation, the industry can expect more pressure to implement in situ technologies. For example, a comparison of the greenhouse gas emissions between competing technologies may become a routine factor in the remedy selection process.

At WSP we expect bioremediation and other in situ technologies to play an important role in the future as sustainable remediation is embodied by regulatory agencies. This clearly illustrates the importance of understanding the concepts and developments in the evolution of bioremediation techniques.

### Delivery is critical

A critical element of every in situ bioremediation project is ensuring the injected solutions, with or without bacteria added, are well distributed throughout the treatment area.

The importance of the injection process is often overlooked, resulting in an unsuccessful project. A successful injection program is a function of injection point spacing, pressure, and the equipment used. Measurements should be made during the injection to ensure that the distribution is adequate. Often, it is necessary to conduct additional injections to ensure complete distribution; however, monitoring and adjusting during the injection process can help minimize the number of injections and, thus, reduce cost.

### Role of in situ technologies in sustainable remediation

The concept of sustainable remediation is gaining traction around the world with initiatives in the US, EU, and Australia, among others. Since it does not involve the installation of mechanical equipment that will operate for an extended period of time, in

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# RESPONDING TO THE VICTORIAN BUSHFIRES

In early 2009, bushfires swept across the state of Victoria destroying over 400,000 hectares of land and an estimated 78 communities. More than 3,000 private homes, businesses and schools were obliterated and sadly the conditions on the day also caused the death of 173 men, women and children. There were very few Australians who were not affected in some way by the scale of this tragedy, including members of our WSP team.

Many years of drought had left the Victorian bush tinder dry. The combination of temperatures in the 40s (greater than 104 Fahrenheit) and hurricane force winds provided unprecedented conditions for a fire of immense proportions and severity. While some of the fires are believed to have been accidentally started by power lines, arson is also suspected as a cause.

The response from Australians and the international community has been immense. Over 300 million dollars has been donated to the Victorian Bushfire Appeal to date. The Commonwealth and Victorian Governments established the Victorian Bushfire Reconstruction and Recovery Authority to oversee and coordinate the largest recovery and rebuilding programme the State of Victoria has ever undertaken.



### Logistical challenges of the cleanup

Grocon Pty Ltd (a large privately-owned construction company) was appointed as project managers for the cleanup works. Many of the properties in the townships contained asbestos and WSP was asked by Grocon to assist with environmental advice and to provide air monitoring and cleanup certification for each site before rebuilding could commence.

The immense size of the project, combined with the urgency to get people back into their homes and restore communities, presented a real logistical challenge for us.

The fires on 'Black Saturday' spread over a vast area, with affected zones up to 400km apart. The challenge for our project managers was to manage all our people over this large area and provide supervision, monitoring and advice to over 50 Grocon demolition teams daily.

In response to the logistics and the enormity of the challenge, our project team rapidly drew on expertise and resources from

multiple locations across not just our Australian team, but our global team, to assist. The importance was in the whole WSP team responding as one. The team met this challenge with conviction and commitment, in spite of long hours and often difficult conditions.

We drew on over 40 people, with personnel from across all roles and disciplines within our business.

To assist with the emotional recovery of the community it was necessary to remove the waste and physical evidence of the tragedy. Grocon went about their work with sensitivity and much-needed speed and efficiency.

The manner in which WSP successfully met Grocon's demands for this project is testament to our capacity as a global company and illustrates our ability to mobilise, lead and integrate large teams of staff expeditiously, and in a financially viable manner.

**“We must not forget that while it was a very successful project, the circumstances are still the saddest in our history. The devastation and widescale destruction witnessed will not be easily forgotten. In recognition of this, WSP contributed part of our services on a pro bono basis. We hope that our contribution has aided the reconstruction process and has helped people to recover from the sheer devastation of this unforeseen tragedy.”**

Alex Mikov, Principal Environmental Scientist at WSP Environment & Energy in Australia

 *The importance was in the whole WSP team responding as one*



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# NEWS IN BRIEF

## UNDERSTANDING CLIMATE CHANGE IN JOHANNESBURG

In 2009 WSP was commissioned by the Climate Change and Air Quality Directorate of the City of Johannesburg to develop a climate change adaptation plan for the city.

The project involved an assessment of the impacts of climate change on key aspects of the city, including economic/financial, energy, infrastructure and the environment. Our work has set out to help the city identify appropriate adaptation strategies and develop a framework for prioritisation based upon cost-benefit analysis and other economic tools.

Johannesburg has made significant progress on mitigation planning in recent years. However, it has been recognised from a scientific, policy and city administrative perspective that major adaptations to climate change are required irrespective of the longer-term benefits of mitigation efforts.

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## STRATEGIC REVIEW OF CLEAN TECHNOLOGY PROJECTS FOR ASIA PACIFIC PARTNERSHIP

Our Australian team has been commissioned by the federal Department of Resources, Energy & Tourism to undertake a strategic review of 20 clean technology projects for the Asia Pacific Partnership on Clean Development and Climate (APP).

WSP is leading a consortium including law firm, Baker McKenzie, and Clean Technology AustralAsia and will examine the progress, results and effectiveness of APP's current flagship portfolio of cutting-edge clean technology projects across this region. Results will be presented at the next joint Ministerial and APP Policy and Implementation Committee meeting in China in late 2009.

The APP aims to accelerate development and deployment of clean energy technologies in the Asia Pacific region. This is a very significant project for the governments of the countries involved. The Partner Countries are Australia, Canada, China, India, Japan, South Korea and the USA. They are collaborating voluntarily to address climate change, energy security and air pollution challenges to encourage economic development and reduce poverty.

Our analysis provides both quantitative and qualitative measures on each project, with detailed recommendations aimed at improving the future success of APP.

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## BLOG DEBATE: THE FUTURE FOR PRODUCTS?

Will products be delivered as services?  
Will they be leased, not sold, in the future?  
This is a current discussion on our blog.

Chris Kral, a sustainability consultant in our US team, explains the concept: "Product stewardship requirements could lead a manufacturer to look at the full value of their product throughout its life cycle as they focus on leasing opportunities. The less energy and maintenance a product needs, the greater the profit during its operational phase." Businesses which adopt this model will be incentivised to deliver products that are efficient and reliable throughout their lifecycle – as their value to the manufacturer no longer ends once they have been sold. This business model satisfies a profit imperative as well as sustainable principles – two forces often seen as polar opposites.



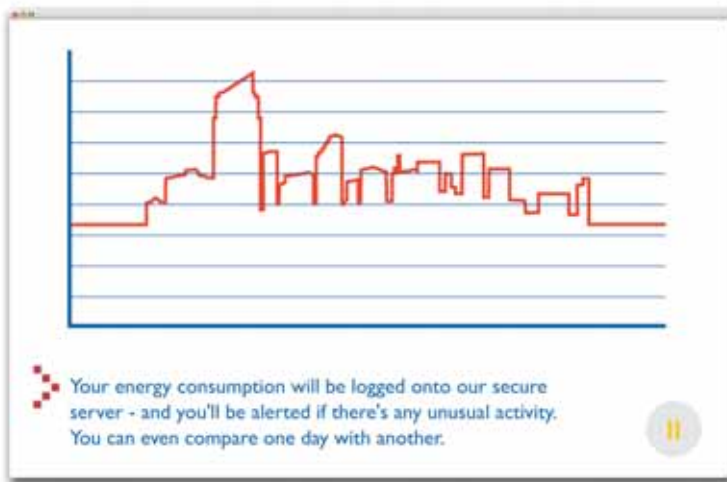
But can this concept become a universal and acceptable business solution? WSP Director, David Symons, notes it is already being put into practice: for example, carpeting service Interface Inc leases its floor tiles, and therefore has a valued interest in maintaining the quality of its carpets throughout their lifecycles. But, as Andrew Sweatman from our Australian business warns, it may be too difficult for every company to reconstruct their entire business model to convert their products into services. He advocates a focus on reducing the environmental impact of products and also warns that some new service concepts may actually have a greater impact on the environment, for example car sharing 'services' might increase the use of cars instead of public transport.

'Products as services' is an interesting idea, but can it become a mainstream concept? What's your view? Contribute to the debate online at: [www.wspenvironmental.com/blog](http://www.wspenvironmental.com/blog)

## ENERGY BUREAU

Our online virtual energy management service is being used successfully by one of the world's leading infrastructure, finance and media companies. It's helping them track and reduce energy use and emissions in key properties in their worldwide portfolio. They are reducing bottom line costs, delivering against sustainability targets and in the UK the activity contributed to receiving a London Green 500 award.

Learn more about this service: [www.wspenvironmental.com/energybureau](http://www.wspenvironmental.com/energybureau)



## WATER FOOTPRINTING TOOL

The double-edged debate around water security gains momentum – it's scarce due to population growth and shifting due to climate change. Daily water consumption per person in a UK house is approximately 150 cubic metres per day, according to the WWF, though this accounts for only 3% of a person's daily water consumption; the remaining 97% is embedded or 'virtual water' in the things we buy.

At WSP we have launched a water footprinting tool for use by business worldwide. It's an easy planning tool specifically designed to identify a company's water use and the impact of it. The tool helps identify water risk across a business; in supply chains, direct operations and in the use of products. The output provides clear, consistent and understandable information for busy management boards to act on.

Learn more about this service:  
[www.wspenvironmental.com/water](http://www.wspenvironmental.com/water)

## HIGHWAYS AND CLIMATE CHANGE

At the Earthworks in Europe 2009 Conference in London we presented a poster examining how climate change is affecting the stability of geotechnical and structural highway assets.

Our work on a major road in Northern England revealed that excessive rain and snowfall contributed to the development of landslips, by fracturing retaining walls and weakening foundation materials. As climate change 'develops', the number of highway geotechnical and structural assets that require preventative and remedial solutions will increase. Regular inspection is important, as is designing and constructing stability measures such as slope drainage systems, robust earth retaining structures, ground anchorages and soil nailing solutions.

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## iPHONE APPS

Our specialist online sustainability consultants have delivered highly popular apps for Apple's iPhone in 2009. 'The Hidden Park' is the latest innovative approach in engaging children in environmental issues. Designed as a game, the gardens of a fantasy land, threatened by developers, are in need of protection. This app combines indoor and outdoor adventure. At WSP, development of apps reflects a drive for 'dematerialisation'; products designed to deliver more functions, resulting in the need for fewer overall products and therefore less impact.

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# OUR PRINCIPAL OFFICES



## LET'S TALK

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By email: [environmental@wspgroup.com](mailto:environmental@wspgroup.com)

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