

September 2014

This briefing presents the findings of The Global Commission on the Economy and Climate as documented in their *New Climate Economy Synthesis Report*, 'Better Growth, Better Climate' as a short and relevant summary for a business audience. The full New Climate Economy report can be accessed at www.newclimateeconomy.report and was released in September 2014.

The report sets out to understand how countries with different economies can achieve economic growth and development, while reducing the risk of dangerous climate change.

The **New Climate Economy** project was overseen by the **Global Commission on the Economy and Climate**. Chaired by former President of Mexico Felipe Calderón, the Commission is made up of 24 former heads of government and finance ministers, and leaders of businesses, cities, international organisations, and research institutions. The Commission was advised by a panel of 15 economists, all world leaders in their respective economic disciplines.

The Prince of Wales's Corporate Leaders Group (CLG) is a select club of European business leaders working together with the support and advice of the University of Cambridge Institute for Sustainability Leadership, to advocate solutions to climate change to policy makers and business peers at the highest level, both within the EU and globally. See www.cisl.cam.ac.uk/clg

Recognising that the New Climate Economy project brings together new research and information, CISL has, on behalf of the CLG, developed this briefing to summarise the findings and recommendations of the New Climate Economy report for business.

Neither the CLG member companies, nor the group as a whole specifically endorse any given findings.

THE NEW CLIMATE ECONOMY

The Global Commission on the Economy and Climate



THE PRINCE OF WALES'S
CORPORATE LEADERS GROUP

Key Messages

1. The next fifteen years will see the global economy undergo a deep structural transformation.

Whatever choices are made business, along with the rest of society, will face dramatic changes as:

- The global economy will grow by more than half
- A billion people will come to live in cities
- Technology will continue to transform business and lives
- Around US\$90 trillion will be invested in key economic infrastructure.

Because of the long-lived nature of infrastructure assets, the investments made during the next 15 years will also determine whether global average warming will exceed the 2 degree centigrade limit the international community has agreed not to cross.

2. There are major opportunities in three key economic systems: cities, land use and energy.

By improving resource efficiency, investing in infrastructure and stimulating innovation across these sectors and the wider economy, governments and businesses can deliver strong growth with lower emissions.

Business has a key role to play. The private sector is fundamental to all three of these economic systems, and will be involved in and transformed by the drivers of change. A growing number of companies which have already embraced the low-carbon transition have noted benefits to their bottom lines. Addressing climate change can increase productivity, reduce input costs and also spark creative solutions and innovation.

3. Economic growth and action on climate change can be achieved together.

The 15 years ahead present an opportunity to countries at all stages of development and income to build lasting economic growth whilst reducing the risks of climate change. Low-carbon policies can generate strong growth, in the next 5 – 15 years, but this is dependent on the right policy and investment choices. Many low-carbon policies deliver significant additional benefits – energy security, reduced traffic congestion, improved air quality and quality of life. Managed well, the additional investments in infrastructure needed to make the low-carbon transition are small and higher capital costs could potentially be offset against lower operating costs.

This is not all win-win – there will be losers and transition costs, but there are many policies and actions that can mitigate such costs.

The Global Action Plan

The New Climate Economy Report proposes a 10 Point Global Action Plan for policy makers and business leaders.

The measures identified in the action plan can deliver significant economic benefits, in the next five years, and even before their climate benefits are considered. They can also deliver the majority of the emissions reductions we need to avoid dangerous climate change.

- 1. Accelerate low-carbon transformation by integrating climate into core economic decision-making processes**
This is needed at all levels of government and business – from establishing as a standard agenda item at major international fora such as the G20, to businesses establishing integrated reporting that includes climate risk exposure and risk reduction strategies alongside other financial information.
- 2. Deliver a strong, lasting and equitable international climate agreement**
This will help create the confidence for domestic policy reform and send a strong signal for investors. Such an agreement should set a long term goal to deliver net zero global emissions in the second half of this century.
- 3. Phase out subsidies for fossil fuels and agricultural inputs and incentives for urban sprawl**
National governments, export credit agencies, development banks, as well as regional and city authorities should align their incentives in order to drive more efficient use of resources and release public funds for other uses.
- 4. Introduce strong, predictable carbon prices**
National governments should introduce rising carbon prices as part of fiscal reform and use the resulting income to manage the impacts on the most vulnerable households. Major companies should apply a 'shadow' carbon price to their investment decisions.
- 5. Substantially reduce the capital cost of low-carbon infrastructure investment**
All public sector bodies and funding institutions need to review lending and investment policies and practices, so they phase out financing of high-carbon projects and increase capital available and leverage private finance for low-carbon and climate resilient infrastructure.
- 6. Scale up innovation in key low-carbon and climate resilient technologies and remove barriers to entrepreneurship and creativity**
G20 governments should triple energy related R & D expenditure by the mid-2020s aiming to exceed 0.1% of GDP. Governments should additionally, support development, demonstration and deployment of radical technologies such as energy storage or Carbon Capture Use and Storage, and establish carbon pricing, performance standards and public procurement policies to strengthen market pull for new low-carbon technologies.
- 7. Make connected- and- compact cities the preferred form of urban development**
Local, national and regional governments and development banks should commit to a compact, coordinated urban development model, centred on mass transport.
- 8. Halt the deforestation of natural forests by 2030**
Developed countries should increase REDD+ payments to at least US\$5 billion per year, while forest rich countries address governance and market failures, and companies and trade associations commit to eliminating deforestation from their supply chains.
- 9. Restore at least 500 million hectares of degraded forest and agricultural land by 2030**
This will involve national governments, development banks, NGOs and the private sector.
- 10. Accelerate the shift away from polluting coal-fired power generation**
All governments should aim for phase-out of unabated fossil fuel powered generation by 2050. High income countries should immediately end the building of new unabated coal plants and accelerate early retirement of existing unabated capacity. Middle income countries should immediately limit new construction and halt new unabated coal plants entirely by 2025.

Summary of Implications for Businesses

There are key opportunities for business in:

- Cities, land use and energy sectors, especially for infrastructure growth markets in developing countries;
- Energy and resource efficiency markets, including companies with offers in developing the circular economy and remanufacturing;
- Innovative, low-carbon business models.

There are key risks for business:

- In high-carbon sectors;
- With exposure to potential stranded assets, particularly coal.

The action plan includes the following specific recommendations for business:

- Integrate climate risk and carbon reduction into core business strategy;
- Provide public integrated financial and environmental reporting;
- Adopt shadow carbon pricing;
- Work to increase energy and wider resource efficiency;
- Strengthen collaborative sectoral initiatives, particularly in areas with high emissions and high international trade flows;
- Align advocacy and lobbying efforts behind better climate regulation.

Key Systems and Change Drivers:

The New Climate Economy Project analyses three key economic systems (cities, land use and energy) as well as the wider conditions necessary to foster low-carbon and climate resilient investment and growth.

1. Cities

Much urban growth is unplanned and unstructured. If development continues in this vein, the global area of urban land could triple between 2000 and 2030 – adding an area the size of Manhattan daily. The number of cars could double from 1 to 2 billion.

Sprawl increases the costs of providing utilities and public services by 10-30% or more and increases motor travel and costs by 20-50%, requiring governments to take measures such as diverting resources or increasing the tax base. However, planning for higher densities of buildings and mixed use neighbourhoods could reduce capital spending on urban infrastructure by more than US\$3 trillion globally over the next 15 years. This would also encourage walking and use of public transport. Estimates for the US suggest that this type of urban development could reduce per capita car use by 50% and household expenditure by 20%.

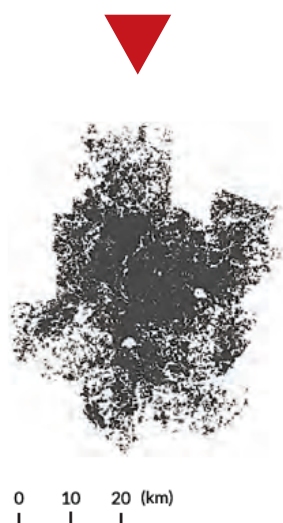
A compact model based on public transport provision in the world's largest 724 cities could reduce greenhouse gas emissions by up to 1.5 billion tonnes of CO₂e per annum by 2030. Most of this would be achieved by reducing personal vehicle use, building on demonstrated successes.

- Bus Rapid Transit (BRT) can cost less than 15% of a metro system. The BRT in Bogota, Columbia carries up to 2.1 million passengers per day.
- China will have 3000 kilometres of urban rail networks by 2015.
- In 2000 just 5 cities had bike sharing schemes – this had increased to 700 cities by the end of 2013.

National governments and city governments need to work together to develop policies to reduce the use of fossil-fuelled vehicles in cities and drive compact development .

The benefit of dense development is illustrated by comparing Atlanta in the US and Barcelona in Spain. Both have similar populations but Barcelona covers less than 4 per cent of Atlanta's built up area.

ATLANTA'S BUILT-UP AREA



POPULATION: **5.25 MILLION**
URBAN AREA: **4,280 KM²**
TRANSPORT
CARBON EMISSIONS: **7.5**
TONNES CO₂ PER PERSON
(PUBLIC + PRIVATE
TRANSPORT)

BARCELONA'S BUILT-UP AREA



POPULATION: **5.33 MILLION**
URBAN AREA: **162 KM²**
TRANSPORT
CARBON EMISSIONS: **0.7**
TONNES CO₂ PER PERSON
(PUBLIC + PRIVATE
TRANSPORT)

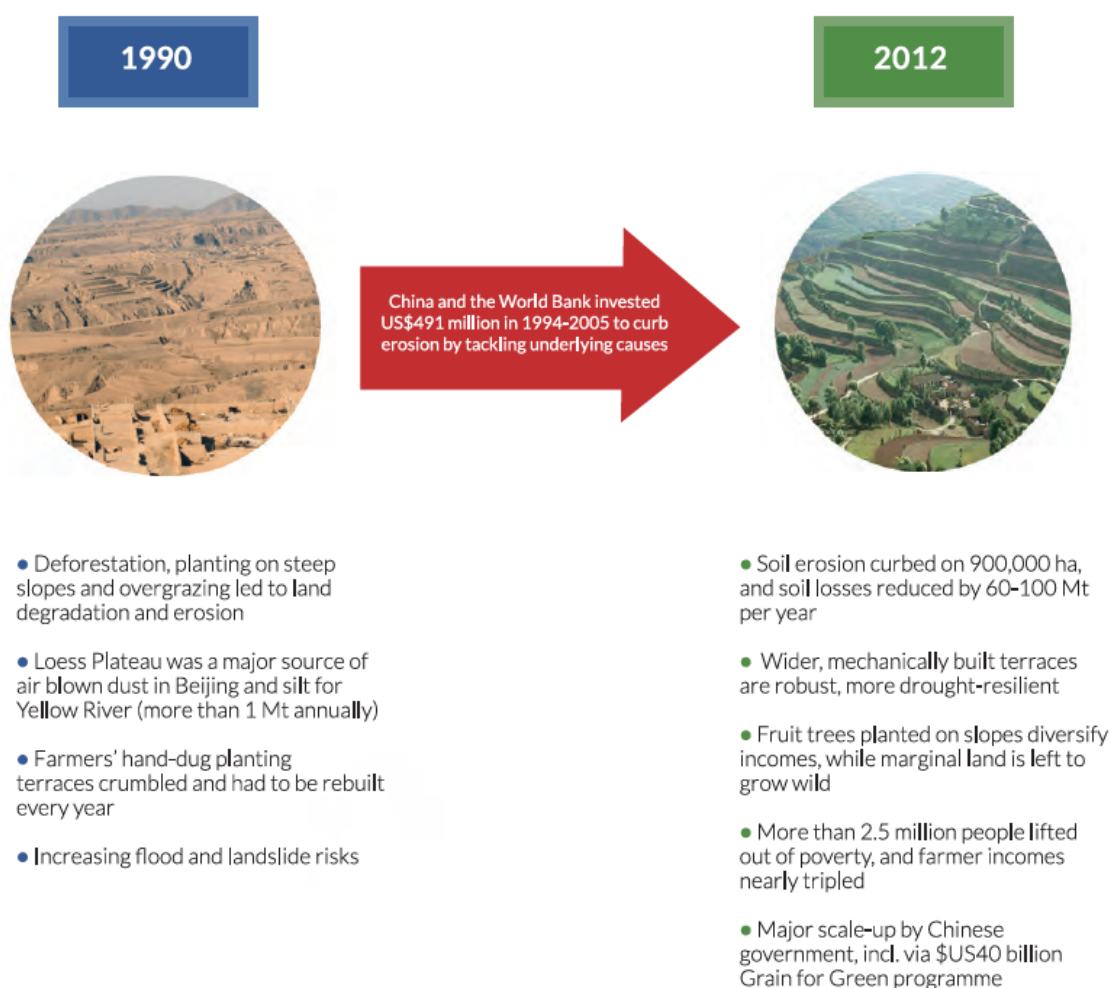
Source: Bertaud and Richardson 2004

2. Land use

Over the next 15 years, 80% of the new demand for agricultural and forest products will be in developing countries. By 2050, the world's farms will need to produce 70% more calories than they did in 2006 – due to population growth, rising incomes and changing diets. Meeting this demand will be critical to growth, food security and poverty alleviation. It will also create huge opportunities for businesses of all sizes and to improve climate outcomes.

There is considerable scope to step up funding for agricultural R & D to increase productivity and resilience. One way to free up funds for R & D is to reduce agricultural input subsidies. Agricultural subsidies in China rose to US\$73 billion in 2012 (9% of agricultural output) while OECD country governments paid farmers US\$32 billion based on input use that year. The subsidies aim to boost productivity but can lead to waste and environmental damage. Phasing out such subsidies can provide funds for R & D and direct support to low income farmers. It is estimated that GHG emissions could be reduced by 200 million tonnes of CO₂e per year in China alone by more efficient use of fertilisers.

China's Loess Plateau shows how projects can implement an agricultural landscape approach.



Source: World Bank project completion evaluations of the Loess Plateau Watershed Habilitation Projects I and II, 1999 and 2005.

Land degradation can be addressed by well-tested practices. Governments and development partners should commit to restoring degraded agricultural land through scaled-up investment and landscape level approaches that consider ecosystems, resource use and human activity.

Forests as natural capital

The volume of wood removed from forests will increase three-fold between 2010 and 2050. At the same time, the growing demand for food and the consequent increase in the value of agricultural land puts further pressure on forests. Millions of hectares of forest are being lost each year.

The full value of forests and their products are not recognised or internalised in the market place and problems are often compounded by lack of knowledge, or lack of resources to enforce measures and regulations. Restoration of 350 million hectares by 2030 could generate net benefits in the region of US\$170 billion per year from, for example, watershed protection, improved crop yields and forest products. Technological developments in satellite technology, digitalisation and communications are all demonstrating they have an increasing role to play in monitoring and protecting forests.

Following the recommendations in the report for agriculture, forests and land use change, could lead to a reduction in emissions from these sources of around 7.3 Gt CO₂e per year by 2030. This will have implications for companies with supply chains based on forest or agricultural products.

3. Energy

Global energy use has grown by more than 50% since 1990. Since 2000, all the net growth has occurred in non-OECD countries. Future energy demand is difficult to predict but projections indicate global increases of 20-30% over the next 15 years.

Meeting this demand will require around US\$45 trillion of investment in energy infrastructure. The decisions over how that money is spent will have a critical impact on prospects for high quality growth and action on climate change.

The outlook for coal

Coal has many disadvantages. Mortality from air pollution in China costs 10% of GDP. Properly accounting for air pollution from coal can add costs of US\$40 per MWh or more – enough to cancel out the price advantage of coal over lower carbon alternatives.

Coal is not very efficient. It accounts for 73% of power sector emissions but only 41% of generated electricity. Many of the necessary reductions in coal emissions can be achieved at zero or very low net cost once the health impacts and falling costs of alternatives are taken into account.

A new era for renewable energy sources

Over a quarter of the growth in electricity generation in 2006-2011 came from renewable energy sources. Wind and solar power are increasingly cost competitive with coal and gas. Wind power has been the cheapest new power source at recent auctions in Brazil. South Africa has bought wind power at up to 30% below the cost of new coal fired generation.

Solar photovoltaics cost half as much as they did in 2010 as module prices have fallen by 80% since 2008. The competitiveness of wind and solar has led to a sea change in expectations with baseline scenarios assuming large shares of new power from wind and solar in the next decades.

More can be done to accelerate this change - markets set up for fossil fuels need to adapt, and the challenges for back up power addressed in ways that will allow for greater use of renewables.

Making the most of our energy supply

There is an enormous opportunity to transform the lives of 1.3 billion people who currently have no access to electricity and the 2.6 million people who lack modern cooking facilities. The potential for off-grid and mini-grid solutions alongside falling costs, new business models and technological developments means that long standing problems are increasingly soluble. But there is a need to ensure that future supply will keep pace with growing demand and that the pace of change is accelerated.

Energy efficiency improvements have cut the effective demand for energy in developed countries by 40% over the last 4 decades. No other measure has contributed so much. There is huge potential for energy efficiency to deliver benefits in developing countries. India's energy requirements in 2030 varies by up to 40% between energy efficiency scenarios. National roadmaps can help to identify and capture energy demand management measures.

4. Economic Policy

Investors need to operate within a framework that supports better growth decisions. For example, fossil fuel subsidies create negative carbon prices which send the wrong signals on consumption and investment.

Introducing a positive carbon price through tax or trading sends a clear signal to investors and business about the decisions they should be making, and performance standards can drive the adoption of efficient technologies. All of these require measurement and analysis of the potential risks of climate change and the costs and benefits of action.

These policies can be difficult and unpopular to introduce but by taking a step by step approach, it is possible to increase ambition as business and the public become better informed and familiar with the measures and interested in how they adapt to or benefit from future opportunities. Identifying and taking action to reduce the cost or transition impacts on those most negatively affected by new policies will be necessary.

5. Finance

The challenge of climate change and the need for investment in untried or riskier projects has led to some creative thinking that challenges traditional investment and business models and creates new opportunities. Much of this has been made possible by the enormous advances of digitalization, communications and information technology.

In rich countries, new vehicles for low-carbon investment have been developed, with the potential to reduce financing costs for low-carbon electricity by up to 20%. They allow investment in infrastructure assets to yield predictable returns, but depend on an appropriate regulatory regime. The challenges for investment are much greater in middle income and low income countries where private financing costs are so high that they wipe out any advantage from lower construction or labour costs.

There is a real need to develop new initiatives, funding vehicles, special purpose funds and institutions dedicated to providing energy in low income countries and more needs to be done in all countries.

Creating new value and reducing stranded-asset risks

Low carbon infrastructure has significantly lower operating costs and a longer expected lifespan than fossil fuel assets. It also has the potential to achieve lower costs of capital, if financing and energy systems can be structured to take advantage of its inherently lower risks.

Taking everything into account – including operating savings, the full impact of a low-carbon transition in the energy sector would be an estimated net financial benefit of up to US\$1.8 trillion over the period 2015-2035. This accounts for all investment impacts of a transition to a 2 degree C scenario from “Business As Usual” including the decline in value of some stranded fossil fuel assets.

Reducing the risk of stranded assets is essential and requires strong policy signals about future economic direction and national and business assessment of stranded asset risks for coal, oil and gas and developing contingency and diversification plans.

6. Innovation

In the last 10 years, technological developments have driven down the cost and improved the performance of wind and solar energy. In the US in 2010-2013 over 30% of new electricity generation capacity added involved wind and solar power – up from less than 2% in 2000-2003.

Digital technologies will play a significant role in the transition. They are already delivering changes that would have been inconceivable a couple of decades ago. Examples include facilitating car sharing, avoiding congestion, and controlling the heating and lighting in our homes more reliably. Some technologies can scale rapidly – China has already installed nearly 250 million smart meters.

A 'circular' economy

Many companies are now looking at the alternatives to a resource heavy traditional business model with obsolescent goods ending up in landfill, and are attempting to recycle, reuse and remanufacture where possible. At the heart of the 'circular economy', new materials technologies can help with the conversion of used materials to new materials. Digital technology similarly supports market creation, matching used goods with potential reuse or remanufacture markets.

Cat Reman is the remanufacturing division of US machinery maker, Caterpillar. Materials make up almost 2/3 of Caterpillar's costs. Cat Reman disassembles products at the end of their lives, cleans and salvages all that can be reused. The company can make "same as new" condition products available to customers at a fraction of the cost of new ones whilst reducing waste and greenhouse gas emissions.

The United States has the largest domestic remanufacturing industry in the world which grew by 15% between 2009 and 2011 to at least US\$43 billion supporting 180,000 full time jobs. A global circular economy worth more than US\$1 trillion could, it has been estimated, be generated by 2025.

To incentivise this shift requires new regulations such as better labelling, and preferential tax treatment for goods with recycled components. Some existing regulations, for example on waste, may prohibit high value reuse. It is crucial that recycling and remanufacture is underpinned by policies that ensure safe working practices and environmental protection.

Buildings

Tackling the impacts of our buildings is a key priority:

- Buildings consume 32% of global energy
- Produce 19% of energy related GHG emissions
- The construction industry produces 30-40% of global waste.

There is huge potential for improving energy efficiency, reducing GHG impacts and creating economic value through new products and materials, improved process efficiency in cement and steel and introducing circular business models. However, prescriptive standards and regulations can slow innovation and policies that are performance and outcome focused can help incentivise the changes needed.

Promoting innovation to support a low-carbon transition

There are real obstacles in the way of the innovation that are slowing the low-carbon transition. Barriers to entry into industry can prevent innovation and should be assessed and addressed as these can delay the adoption of new business models and technology. Energy sector, publicly funded R & D is half the level that it was in the 1970s in real terms, despite the number and urgency of the challenges the sector faces.

To attract significant private investment, new low-carbon technologies will have to offer high rewards requiring a strong intellectual property rights (IPR) regime. However, IPR can also create a barrier to the diffusion of environmental technologies by limiting access, raising costs and placing countries with low institutional capacity at a disadvantage. Developing partnerships to create rewards and share successes will be essential.

7. International Cooperation

Five key forms of international cooperation can strengthen low-carbon and climate resilient growth.

1. a new international climate agreement
2. increased flows of international climate finance
3. improved trade agreements
4. voluntary sectoral agreements
5. changes to the rules and norms of the global economy

1. A new international climate agreement

An agreement cannot force countries to tackle climate change but it can provide a global framework of rules and commitments that makes strong action more likely. By setting a long term goal – such as bringing global emissions to at or below net zero in the second half of the century – it can act as a macroeconomic signal to investors of the future direction of the global economy.

A new agreement must be equitable. Whilst the majority of greenhouse gases in the atmosphere were emitted by developed economies, developing country emissions now exceed those of high income countries and their share is increasing. Slowing emissions in developing countries is essential to avoid dangerous climate change. Developed countries will need to make earlier and deeper absolute cuts to their emissions aiming for near complete decarbonisation of their economies by mid-century.

2. Increasing international finance flows

In 2012, an estimated US\$359 billion was directed at low-carbon and climate resilient investments

- of which US\$84 billion flowed across national boundaries
- of which an estimated US\$39-62 billion (46-73%) was directed at non- OECD countries from developed (OECD) countries.
- of this 'North-South' financing, 80-90% was from public sources

International climate finance flows will need to increase sharply to reduce climate risk in developing countries. A route to mobilise the US\$100 billion per annum public and private sector finance by 2020 is needed.

3. Trade agreements

Tariffs on low-carbon and environmental goods raise their costs and slow down their diffusion. It is estimated that around 14% of WTO disputes since 2010 relate, at least in part, to renewable energy. WTO members need to agree to new rules for the faster settlement of disputes that hinder low-carbon trade. New trade agreements offer the opportunity to support low-carbon growth through new common standards and the liberalization of trade in sectors where innovation can support the transition to low-carbon growth.

4. Voluntary cooperative initiatives

Business-led initiatives in sectors where a large proportion of products are internationally traded can help accelerate action whilst maintaining a level playing field and should be encouraged. For example, the Tropical Forest Alliance 2020, which is a partnership of businesses, governments and non-governmental organisations committed to reducing deforestation driven by production of palm oil, soy, beef and paper and pulp.

5. Changing the rules and norms of the global economy

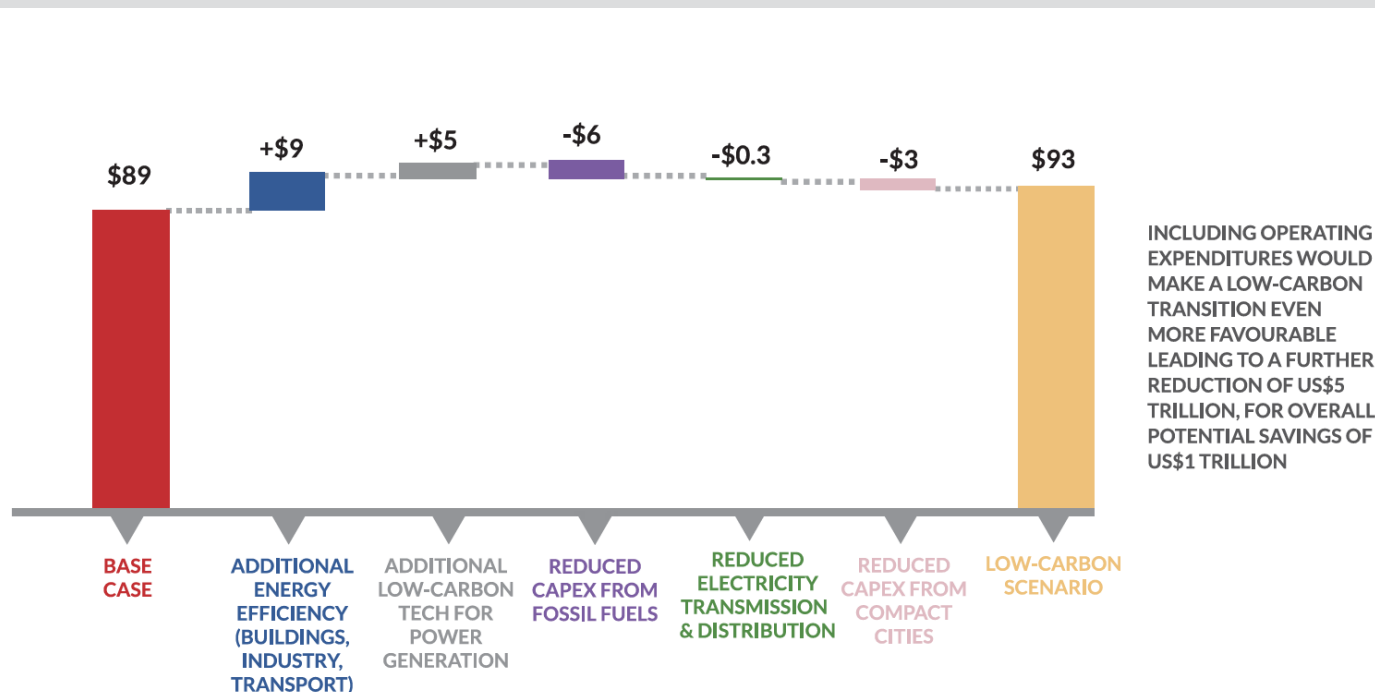
In recent years, more than 4000 global companies have been reporting their GHG emissions, but not all of these companies report systematically on the climate risks they face – the business assets, activities and future profits which are vulnerable because of climate change and climate change policy.

Business reporting on greenhouse gas emissions and climate risk, as well as other environmental and social risks, should be integrated with financial reports and standardised. Investors should conduct climate and environmental risk assessments of their portfolios as part of their fiduciary duty.

Conclusion

The difference in cost between lower carbon forms of growth and high carbon growth is modest. An estimated US\$6 trillion a year will be invested in infrastructure between 2015 and 2030. A shift to low-carbon investment would add less than 5%. Although renewable energy and energy efficient buildings and transport have higher capital costs, these are largely offset due to lower energy supply costs and other savings. There may be other operating cost savings that could completely offset the additional investment costs.

Global Investment Requirements: 2015-2030, US\$ Trillion, Constant 2010 Dollars



Note: See full report for what is included in each category.

The transition will create real challenges – particular where coal or energy intensive sectors predominate. But investment in low-carbon is also a source of job creation. The International Renewable Energy Agency (IRENA) estimates that almost 6 million people were directly employed in the renewable energy sector in 2012 which is close to the number employed in the coal sector globally.

Business has a central role to play by assessing its own risks and adapting business models; by incorporating full climate risk information in their annual reporting; by working internationally, within their sector to find new solutions and partnerships to accelerate actions; and by working with governments to develop ambitious and workable solutions that create employment and growth whilst addressing the climate challenge. If businesses work with policy makers to identify where the gains can be made, and are ready to accept the changes to existing models and policies, then huge advances can be made in a very short time which will reap enormous benefits at many levels

IN THE NEXT FIFTEEN YEARS

Deep structural transformation of the global economy.



The global economy will increase by more than **50%**



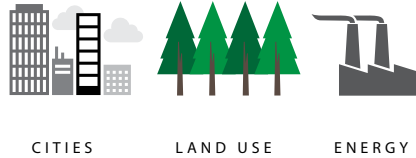
Technology will continue to transform business and lives.



+1 Billion will come to live in cities

\$90 Trillion will be invested in key economic infrastructure.

There are major opportunities in three key economic systems:

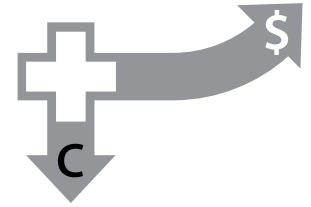


by improving resource efficiency, investing in infrastructure and stimulating innovation.

Business plays a key role

Well designed policies benefit growth and climate change.

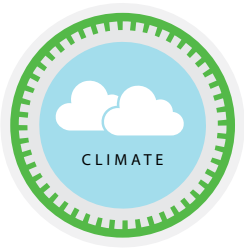
For countries at all stage of development



Many low carbon policies deliver significant additional benefits:

- + Energy Security
- + Reduced Traffic
- + Air Quality
- + Quality of Life

THE 10 POINT GLOBAL ACTION PLAN



1. Integrating climate into core economic decision-making processes.



2. Strong, lasting and equitable international climate agreement.



3. Phase out subsidies for fossil fuels, agricultural inputs and incentives for urban sprawl.



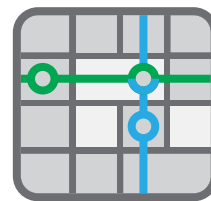
4. Introduce strong, predictable carbon prices as a part of fiscal reform.



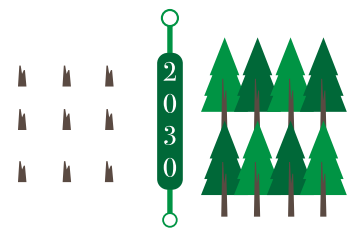
5. Reduce the capital cost of low carbon infrastructure investment.



6. Increase innovation in low carbon technologies.



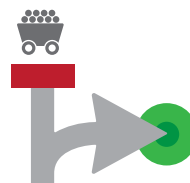
7. Urban development - compact and connected.



8. Halt the deforestation of natural forests by 2030.



9. Restore at least 500 million hectares of degraded forest and agricultural land.



10. Accelerate the shift away from polluting coal-fired power generation.

For further information and the full document please see: www.cisl.cam.ac.uk/clg

design: www.digitalink.eu

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The University of Cambridge Institute for Sustainability Leadership (CISL) brings together business, government and academia to find solutions to critical sustainability challenges.

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Over 25 years, we have developed a leadership network with more than 5,000 alumni from leading global organisations and an expert team of Fellows, Senior Associates and staff.

HRH The Prince of Wales is the patron of CISL and has inspired and supported many of our initiatives.



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