Climate change and sustainability

The role of tax as catalyst for change

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Setting the stage

Drivers for change

Climate change and sustainability are fundamental business issues that are opening up new opportunities to increase revenue and reduce costs. These issues also introduce a wide variety of new risks. Ernst & Young's experience indicates that there are four key drivers to change:

- **Revenue generation** – developing new products and services, implementing new business models, and making investments in innovation, clean technology, and the global carbon market
- **Cost reduction** – mitigating rising energy and commodity prices, through operational efficiencies, reduced waste and business tax incentives
- **Stakeholder expectations** – from investors, customers , consumers, employees, non-governmental organizations (NGOs) and the media
- **Government regulation** – environmental laws, financial reporting requirements, climate change programs, funding and tax incentives

Several fundamental factors are driving worldwide transformation in the way natural resources, including energy and water are produced, distributed, stored, managed and consumed. Experts predict that this transformation to a more resource efficient and lower carbon consuming economy will have the magnitude of a new industrial and technological revolution.

Sustainability initiatives put in place by companies to respond to this new economy generally fall into four categories: **reduce** energy consumption, use of natural resources and carbon emissions; **switch** to alternative energy sources; **innovate** new clean technology and less carbon-intensive products and services to meet demands of the transforming economy; and **offset** carbon emissions.

Alongside this transformation, there has been a rapid increase in policy and legislative change to address both the encouragement of environmentally friendly cleantech expenditure as well as the imposition of higher taxes and levies on business activities that are seen as contributing to negative climate change effects.

Ernst & Young conducted a multi-country survey to assess how tax measures are playing an increasingly important role in changing behaviors across the whole spectrum of the climate change agenda and we share the results and insights in the following report

In addition, we consider the future role of Tax as a change agent for climate change and suggest how hard-pressed tax functions can best prepare themselves for the new models which are emerging.

Business impact

While the Copenhagen Summit on Climate Change in December 2009 was seen by many as slowing down a truly globally coordinated approach to actions to address climate change, it nonetheless set out an important blueprint for using legislation, including primary tax legislation, to enforce reductions in greenhouse gas emissions.

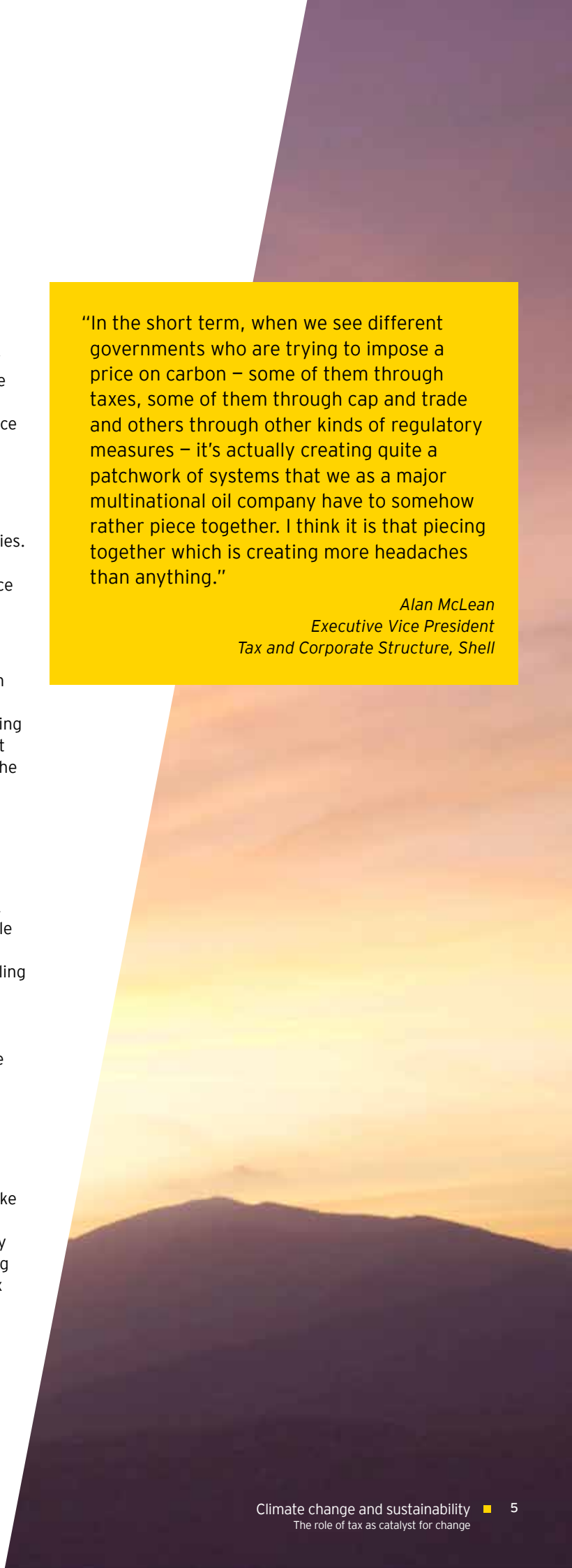
For the first time there is a clear likelihood that major developing economies such as China, India, Brazil and Indonesia will begin using their tax systems to penalize emissions of GHGs by businesses operating in their territories. Alongside this we have recently seen China take a lead in the creation and development of new technologies to reduce emissions.

The tax measures set out in our survey have been taken by governments around the world to encourage the transformation to a more resource-efficient and low-carbon business environment. However, they are only part of such ongoing efforts to meet today's challenges, often augmenting other stimulus packages directed at cleantech development and adoption delivered outside the tax system. That said, the role of tax is bound to increase.

A key activity for corporate management and boards is to ensure that Tax is fully engaged in the organization's agenda of operational efficiency and low-carbon activity. Post-Copenhagen, there has been greater uncertainty and lack of visibility around tax policy and environmental taxes. Nevertheless, companies will need to factor the growing role of environmental taxes and resource efficiency and low-carbon activity incentives into their thinking and modeling in relation to their investment decisions. This will entail heavier taxes on environmentally undesirable activities, whether undertaken intentionally or as a by-product of the business itself. Energy consumption and CO2 emissions are two prime examples.

On the other hand, the taxes raised in this way would enable "good" economic activities, such as employment and enterprise, to be less highly taxed. There will be both opportunities and threats for business. Just how well a company navigates in this evolving tax landscape could make a big difference in relative competitive performance. The message for business leaders is to make sure that they fully engage their tax teams to ensure that their decision-making in this new environment leads to the best possible after-tax outcome for the business.

> "In the short term, when we see different governments who are trying to impose a price on carbon – some of them through taxes, some of them through cap and trade and others through other kinds of regulatory measures – it's actually creating quite a patchwork of systems that we as a major multinational oil company have to somehow rather piece together. I think it is that piecing together which is creating more headaches than anything."
>
> *Alan McLean*
> *Executive Vice President*
> *Tax and Corporate Structure, Shell*



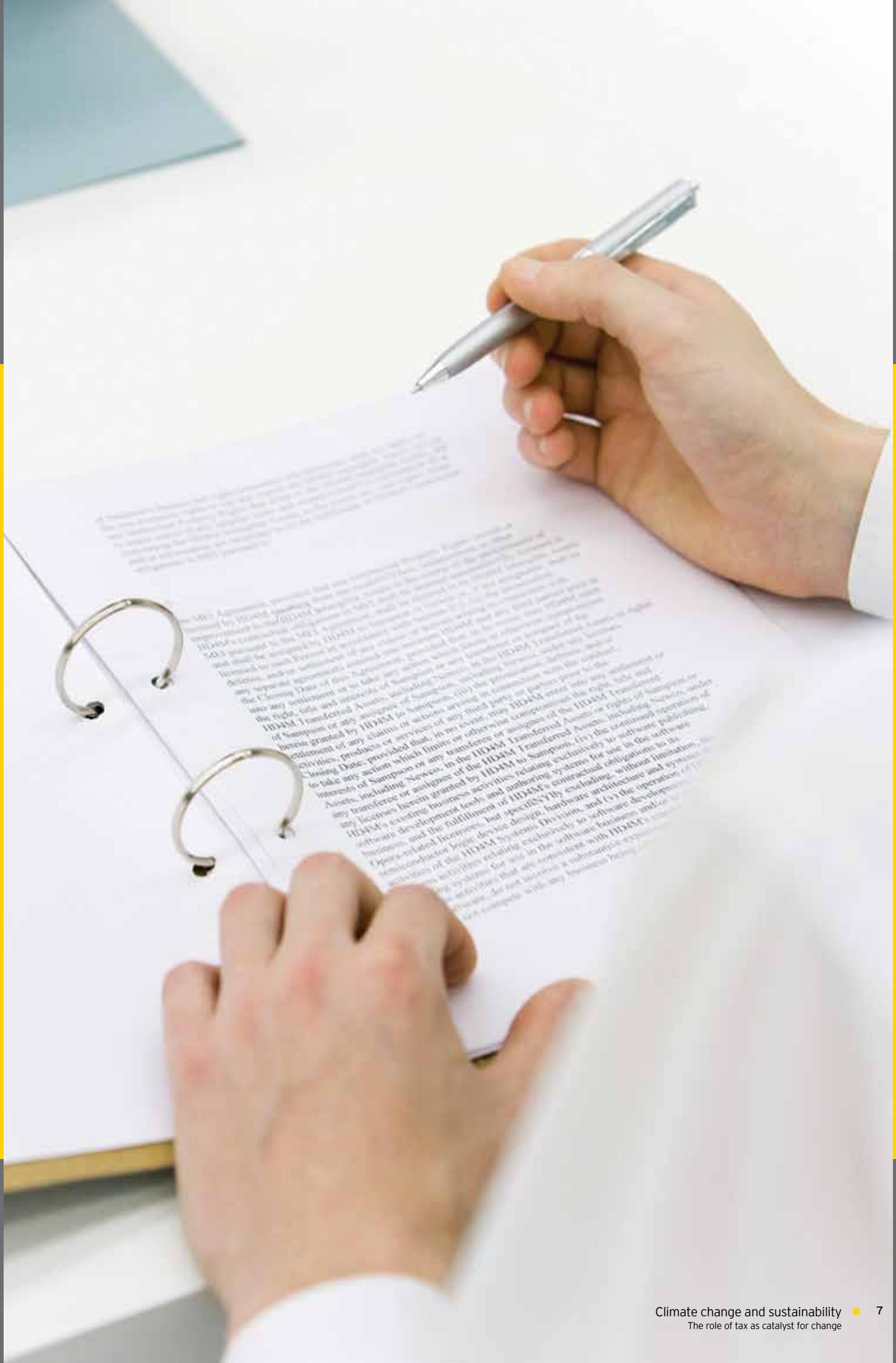
Copenhagen to Cancun

Impacts for CFOs and tax directors

While much emphasis and hope was placed upon the 2009 Copenhagen and 2010 Cancun summits to provide a global tax framework for tackling climate change, the reality is that, with both meetings now closed, no such framework has appeared. The Copenhagen meeting in particular was a source of hope for more coordinated, collaborative action by nations.

The outcome of the meeting was set out in an "accord" signed by the parties, which, although not launching any global tax framework, will instead likely result in a significant increase in the use of local tax systems in order to combat climate change. While the accord is not legally binding, it is likely that following Copenhagen, individual signatories will put in place some kind of domestic legislation to document and frame policies to be implemented to reduce their GHG emissions. As a result, for the first time there is a clear likelihood that major developing economies such as China, India, Brazil and Indonesia will begin to use their tax systems to penalize the emission of GHGs by businesses operating in their territories. To date such taxes have been largely restricted to Europe and in particular the EU member states. The EU taxes take the form of energy or carbon taxes, and this is also likely to be the pattern in developing countries.

A leading practice for tax departments will be to increase their focus on environmental and other indirect taxes incurred by the operational divisions of their businesses, and to put in place the people and processes necessary to understand the incidence of these taxes, ensure compliance in relation to their payment and ensure that all available exemptions and incentives related to these taxes are claimed on a timely basis.



Key findings

Based upon the responses of the participants in Ernst & Young's global cleantech and climate change tax survey, there are four key factors that describe the current global landscape.

- Incentives and grants are the most common government expenditures promoting activities that will lead to a more resource-efficient and low-carbon economy. Accelerated and enhanced depreciation provisions are the second most common.
- The majority of countries surveyed have no national emissions cap. Not surprisingly, the majority of surveyed countries have neither a cap-and-trade scheme nor a carbon energy tax.
- Of the types of behavior targeted by tax policy and incentives, policies designed to "reduce" – that is, make the company more energy efficient, reduce the carbon intensity of the supply chain or encourage the introduction of the design and manufacture of low-carbon products – account for the majority of targeted behavior (68%).
- In the majority of the developing countries surveyed, the Clean Development Mechanism (CDM) represented the most significant targeted incentive to encourage businesses to invest in projects that reduce their GHG emissions.

What this means for the tax function

Distilling all the regulatory and legislative implications — some covered in our survey, some not — it is clear that resource-efficient and low-carbon initiatives will:

1. Create financial value
2. Create tangible and intangible assets
3. Impact existing tax structures
4. Lead to more regulation

How these activities and initiatives play out vary from one country to the next. But there is little doubt that they change the day-to-day responsibilities and corporate profile of the tax director. We have put these fundamental tenets into an operational framework that can help tax directors navigate through the sea of change of climate change transformation and sustainability, as follows:

Management
manage carbon taxes and related environmental taxes efficiently

Action
ensure that the business is aware of and claims all tax credits and other incentives available in connection with more resource-efficient and low-carbon programs

Communication
focus on developing strong communication within the business in relation to the tax implications of the transformation to a more resource-efficient and low-carbon economy

Policy
actively engage in tax policy developments in the cleantech and climate change area

Survey details

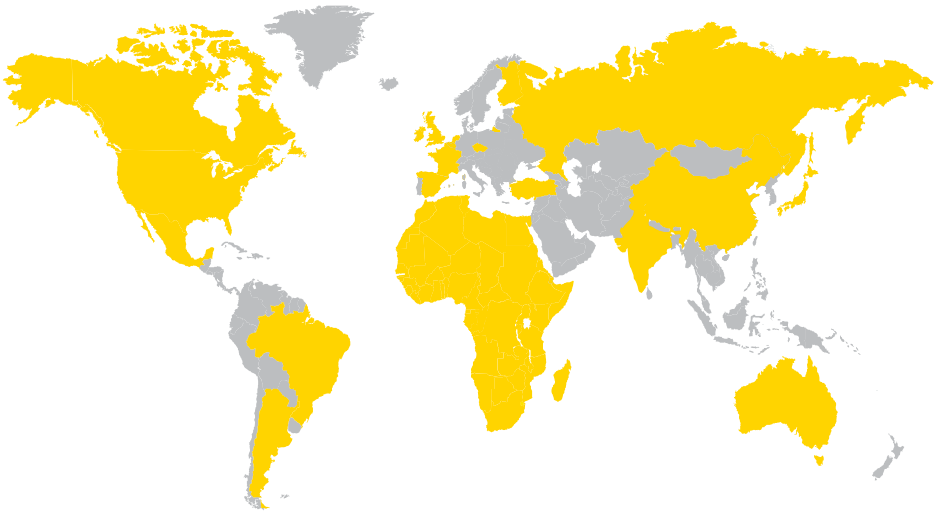
We recently surveyed 38 Ernst & Young country practices, with two main objectives:

1. To capture a description of any emissions trading systems that were operating in each country.

2. To identify, country by country, the tax incentives, credits or other tax mechanisms in place that could reduce the after-tax cost of a company's carbon transformation.

- Angola
- Argentina
- Australia
- Bahrain
- Botswana
- Brazil
- Canada
- China
- Denmark
- Finland
- France
- Germany
- India
- Ireland
- Italy
- Japan
- Kenya
- Korea
- Mexico
- Morocco
- The Netherlands
- Nigeria
- Norway
- Russian Federation
- Saudi Arabia
- Senegal
- Singapore
- Slovenia
- South Africa
- Spain
- Taiwan
- Thailand
- Tunisia
- Turkey
- United Arab Emirates
- United Kingdom
- United States
- Vietnam

Surveyed countries



41%
of the Global 500 have set greenhouse gas emissions reduction targets[1]

New Carbon Finance estimates the EU and Kyoto carbon market value reached **US$120b** in 2009 and will reach **US$265b** in 2012[3]

While many countries are still focused on managing their recovery from the global economic crisis, even those who needed to massively stimulate their economies in the worst parts of 2008 and beyond did so while keeping a firm eye on the sustainability and cleantech agenda. Indeed, many countries continue to rise to the challenge of encouraging more resource-efficient and low-carbon economies as well as corporate operating models focused on this objective. From significantly reduced property taxes on energy-efficient buildings to personal tax credits for photovoltaic investments and from tax holidays for Clean Development Mechanism (CDM) investments to added tax for a car's carbon emissions, the common denominator is *tax*.

Tax systems around the world are playing an increasingly prominent role in influencing and effecting the massive transformation, whether as the carrot, through incentives, or as the stick, through the introduction of taxes. It is interesting to note that countries use tax as a means of encouraging the development, research and commercialization of clean technologies but also as a means of encouraging adoption and deployment of these technologies. Tax policies are also used to drive the business response to climate change and the need to reduce carbon emissions and encourage cross-border activity.

To gain a more comprehensive perspective on just what such efforts look like around the world and how companies should react, Ernst & Young focused on 38 countries and their carbon-pricing mechanisms and tax incentives. This report aims to articulate the range and nature of the tax initiatives that governments are employing to hasten the adoption of low-carbon business models by the enterprises that operate within or across their borders and outline how companies can proactively position themselves within this changing environment.

Stock prices of companies committed to sustainability outperformed their respective industry averages by **15%**[2]

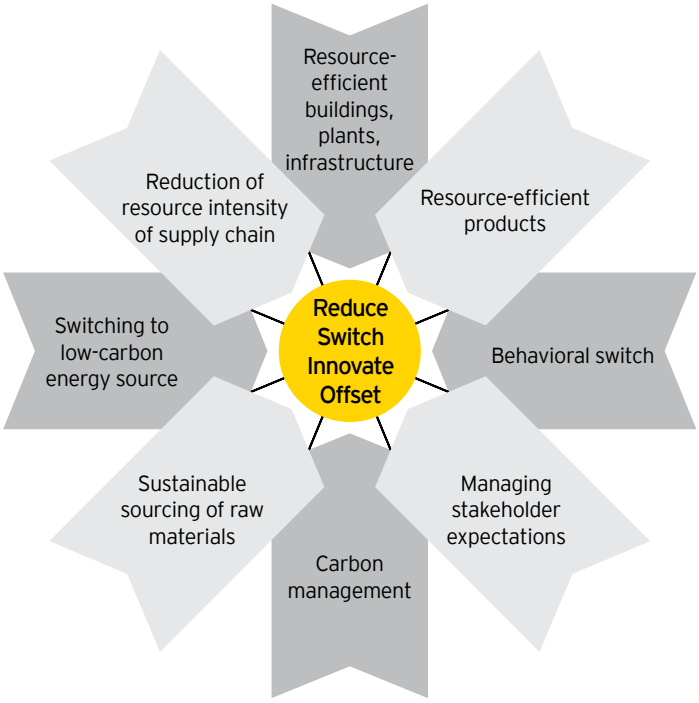
More than **250** climate change regulations and taxes were enacted globally between July 2008 and February 2009[4]

[1] Carbon Disclosure Project, September 2009
[2] *"Green" Winners; the performance of sustainability-focused companies during the financial crisis,* A.T. Kearney, 2009
[3] "Carbon Market Round Up Q1 2009," *Carbon Industry Intelligence*, April 2009, ©2009 New Carbon Finance.
[4] Global Climate Change Regulation Policy Developments: July 2008-February 2009. Deutsche Bank Climate Change Advisors, 2009

Influencing behaviors: incentives and taxes

Our survey results showed clearly that the tools available to governments to influence climate change transformation in business via the tax system fall into two distinct categories:

- Incentives
- Taxes



In each category, we identified a key set of tax measures:

Incentives	Taxes
Tax credits, incentives and grants	Carbon taxes and pricing
Accelerated depreciation	Indirect Taxes
Tax holidays	
Non-tax Incentives	

Broadly speaking, taxes and incentives deployed by government to support the eradication of "negative" climate change behaviors are designed to encourage both corporations and consumers to move toward more efficient and sustainable business models. These behaviors can be grouped into four main categories:

"**Reduce**": improve energy efficiency in buildings, vehicles, machinery and other infrastructure; reduce the carbon intensity of the supply chain; design and manufacture low-carbon products; re-engineer manufacturing processes to reduce the consumption of natural resources, including water; implement solutions to recycle natural resources during the production cycle.

"**Switch**": move to low-carbon, low-emission energy sources, including alternative and renewable energy

"**Innovate**": research and develop innovative solutions to implement internal Reduce, Switch, Innovate and Offset initiatives; design and manufacture advanced energy and reduced emissions products and services

"**Offset**": leverage Clean Development Mechanisms and voluntary markets to generate offset credits by reducing net global emissions

"Responding to climate change and environmental sustainability issues is simply smart business. It means being confident you've examined the risks and seized the competitive opportunities available to create new revenue and to reduce cost."

Steve Starbuck, Americas Leader of Climate Change and Sustainability Services

Incentives

Although the use of incentives as an agent of behavioral change is not a new phenomenon, their application is relatively new when the objective is to encourage the transformation to a more resource-efficient and low-carbon economy. Recent years have seen an increase in the use of tax incentives introduced to encourage investment in the assets and new business practices and processes required by more efficient and low-carbon-based models. These include tax incentives made available in the 2009 US stimulus package, as well as those stimulus packages that contained measures designed to encourage cleantech investments within the European Union (EU), Australia and Canada.

When we asked our survey participants about the types of green incentives being offered in their respective countries, the range of measures we noted was very broad and included:

Accelerated or enhanced depreciation
Enhanced tax relief for certain capital expenditures (e.g., allowing 100% write-off of costs in year one)

R&D credits
Enhanced tax relief for R&D expenditure (e.g., 125% deduction allowed in computing taxable profits)

Direct incentives and (or) grants
Financial encouragement to support certain activities

Subsidies
Direct financial support of certain activities

Reduced indirect taxes
Temporary or permanent VAT or sales tax reductions or, in some cases, exemptions for certain goods or services

Reduced property taxes
Reduction of or exemption from taxes on certain property

Tax holidays
Defined periods with reduced or no tax on profits generated by certain activities or goods; may include other taxes

Transfer taxes
Reduction of or exemption from taxes on the transfer of certain assets

Capital gains taxes on disposal
Tax relief on disposal of certain assets, which may be either at a reduced rate or through extra ways of rolling gains into other capital expenditure

Reduced hydrocarbon taxes or taxes on fuel
Reduced taxes on clean(er) fuels

Customs duties and imports
Reduced import tariffs on certain goods

Personal tax measures
Incentives for individuals to participate in certain activities or investment opportunities that have favorable tax treatment

Incentivizing businesses to reduce, switch, innovate and offset

Tax credits, incentives and grants

Commentary and observations

Stimulating the economy is now often found hand-in-hand with measures to encourage the transformation to a more resource-efficient and low-carbon economy. That said, countries with large amounts of stimulus funding dedicated to energy and cleantech do not necessarily achieve their goals through their tax systems. For example, South Korea has the largest share of funding dedicated to energy and cleantech but is spending the funds on appropriations for research, training and other activities rather than to fund tax incentives.

The use of grants is a more popular mechanism in the developed world, appearing as a very prominent feature of the US stimulus package and also as a means for encouraging cleantech innovation within the EU, Australia and Canada.

In the developing world, such incentives take shape as soft loans for greenfield developments, often augmented by complementary international financing, designed to encourage inward investment and the growth of certain local activities.

Most of the incentives and credits are administered by the tax offices across the majority of provision types covered in our survey. The exceptions are the function or project-specific grants and incentives that would be overseen and administered by regulatory bodies such as a country's energy or transportation agencies. The provisions that do not include tax office involvement are most commonly government-funded grants, bond issues and low-interest loans that support research and investment in targeted activities.

Survey highlights

A year after the global financial crisis began, the United Nations Environment Program reported that US$465 million of US$3.1 trillion in global stimulus funds were committed to environmental projects.[5] How that money is to be used and to what extent varies considerably from one country to another.

- Among the countries we surveyed, the portion of stimulus funding that goes toward cleantech initiatives varies significantly. The average for the survey participants was 17% – slightly higher than the global average of 16%.
- China has earmarked the highest percentage (32%) of economic stimulus money to be invested in resource-efficient and low-carbon projects, with Australia and the US following with 22% and 17%, respectively.
- In terms of green stimulus spending committed through 2008 and 2009, China posts the highest amount with US$221 billion, with the US at US$106 billion.

According to our survey respondents, incentives and grants are the most prevalent government expenditures for promoting activities related to investment in cleantech development and encouraging the adoption of clean technology solutions as part of the transformation to a more resource-efficient and low-carbon economy. Although the tax system and tax credits have been used as an incentive mechanism, the most common type of incentive is direct funding for projects to acquire, develop or construct equipment or facilities that reduce carbon emissions.

The typical structure of the incentives is government funding equal to a set percentage of the eligible projects, costs, generally ranging from 10% to 80% and typically awarded after an application has been submitted and approved. In many cases, these incentives and grants are limited to small and medium-size businesses or are capped at a fixed amount.

- Six of our surveyed countries have individual tax measures that provide incentives to invest in clean technologies, including energy efficiency.
- Nearly 66% of the incentives and credits are available to taxpayers in all industries. Of those that are restricted to certain industries, the most common is the energy sector, with transportation, recycling and auto manufacturing also offered multiple incentive mechanisms.
- Most of the credits and incentives are scheduled to continue beyond 2011; less than 15% of the credits and incentives expire in the next two years.

Table 2: Key tax measures identified by type

Country	Accelerated/ enhanced depreciation	Customs duties/ imports	Incentives/ grants	Other or not classified	Personal tax measures	R&D credits	Reduced hydrocarbon taxes/ taxes on fuels	Reduced property taxes	Reduced VAT	Subsidy	Tax holidays
Angola											
Argentina	✓						✓		✓		
Australia			✓			✓	✓				
Bahrain, Saudi Arabia, UAE											
Botswana											

[5]United Nations Environment Program Update for G-20 Pittsburgh Summit, April 2009

Table 2: Key tax measures identified by type (cont'd.)

Country	Accelerated/ enhanced depreciation	Customs duties/ imports	Incentives/ grants	Other or not classified	Personal tax measures	R&D credits	Reduced hydrocarbon taxes/ taxes on fuels	Reduced property taxes	Reduced VAT	Subsidy	Tax holidays
Brazil			✓						✓		
Canada	✓	✓	✓	✓		✓					
China			✓	✓				✓	✓		✓
Denmark										✓	
Finland	✓		✓				✓			✓	
France	✓		✓	✓	✓		✓	✓		✓	
Germany	✓		✓	✓			✓				
India	✓	✓	✓			✓			✓		
Ireland	✓		✓		✓		✓				
Italy			✓	✓	✓				✓		
Japan	✓					✓					
Kenya											
Korea		✓	✓					✓	✓		
Mexico											
Morocco									✓		
The Netherlands	✓		✓	✓	✓					✓	
Nigeria											
Norway					✓						
Russian Federation	✓			✓							
Senegal											
Singapore	✓		✓			✓					✓
Slovenia			✓		✓						
South Africa											
Spain						✓					
Taiwan		✓				✓				✓	
Thailand		✓	✓			✓					✓
Tunisia	✓		✓						✓	✓	
Turkey	✓		✓			✓					
UK	✓					✓					
US	✓		✓	✓		✓	✓		✓		
Vietnam		✓	✓								✓

* Sub-national government tax credits not included.

Key insights

- The US dominates in the use of credits and grants delivered via the tax system as compared with other countries.
- Some countries have introduced flexibility into their stimulus packages, enabling companies to select from among several grant and tax incentive options for which they can qualify even if they do not pay taxes. These countries include:
  - The US, which provides tax credits linked to renewable energy generation and capital expenditure on renewable assets. However, there is flexibility for companies to receive a tax grant instead of a tax credit.
  - The UK, which builds flexibility by allowing companies to effectively "sell" the R&D allowances and other tax credits back to the tax authority.
  - Australia, which allows investors to access the benefits incurred by qualifying fast-growing businesses (i.e., allows investors to look through and access losses).
- This flexibility is something many countries will be watching to gauge its success and its ability to help attract investors.
- Although China and South Korea are dominant players in green initiatives, those initiatives are not typically delivered through the tax systems of either country. The China stimulus package included 12% for direct energy efficiency and environmental improvements and also provided US$85 billion for investment in rail transport (a lower-carbon alternative) and US$70 billion for new electric and infrastructure. South Korea will be spending the bulk of its investment on constructing more energy-efficient office and apartment buildings and retrofitting and updating public buildings and schools.

Accelerated depreciation

Commentary and observations

Accelerated and enhanced tax depreciation allows for certain capital expenditures to be written off within one year. This is one of the most widespread and specifically targeted incentives in relation to cleantech equipment that businesses may acquire.

Survey highlights

Accelerated and enhanced depreciation provisions are the second most common national-level tax policy used to promote sustainability and reduce carbon emissions in the countries surveyed. The most common assets or types of assets eligible for accelerated depreciation are renewable energy equipment and motor vehicles powered by renewable energy. Energy-efficient equipment and recycling business assets also qualify for accelerated depreciation in some countries.

- Besides the US and some members of the EU, the other surveyed countries that offer accelerated or enhanced depreciation are Canada, Japan, Singapore and Tunisia
- 19 of the developed countries surveyed include accelerated or enhanced depreciation among their incentives
- Only two of the developing countries offer similar incentives

Among the assets and products eligible for accelerated depreciation in a variety of countries are:

- Tangible property and equipment that is used to generate renewable energy or that uses renewable energy or waste fuels (Canada)
- A wide range of environmentally friendly machinery or devices, designated energy-saving technologies and other qualifying investments (India, the Netherlands, Singapore and the UK)
- Cars using electricity, natural gas, liquefied oil gas or superethanol or other low-emission cars (France and the UK)
- Installations producing steam, heat or energy, or facilities that enable water or air cleaning (France)
- Properties and facilities that produce solar water, space or thermoelectric heat, solar hybrid lighting, photovoltaics, wind, biomass, etc. (US)
- Costs for acquiring certain specified facilities that contribute to recycling or otherwise preventing environmental pollution (Japan)
- While a number of countries offer accelerated depreciation, Tunisia *disallows* depreciation on certain cars that consume a large amount of energy

Key insights

- In the current global environment, the effectiveness of accelerated tax depreciation as an incentive to invest in cleantech assets is undermined when the business is loss-making and there is unlikely to be any cash benefit in bringing forward the tax relief from such allowances. This is also true for start-ups, which are likely to be loss-making in the initial year(s).
- Some countries have recognized this and have made accelerated depreciation more flexible (as noted above) as an incentive by including options other than enhanced tax relief.

For example:

- The US tax system offers an enhanced capital allowance system targeted to energy efficiency. It provides for up to a 100% write-off of energy-efficient equipment.
- The UK builds flexibility for certain loss-making businesses by allowing companies to surrender the loss arising from accelerated depreciation back to the tax authority for cash, or effectively "selling" the allowance back to the tax authority.

Tax holidays

Commentary and observations

Tax holidays are favored mechanisms to encourage investment in the developing countries, but they are primarily "blunt instruments" geared to economic advancement and not necessarily targeted at low-carbon-specific efforts.

In India, for example, there are tax holidays for businesses that are set up to generate power. However, the tax holiday is available whether the power is generated from coal or from small-scale, environmentally desirable hydroelectric power. The same is true in China, although there are some more-targeted holidays relating to renewable energy projects and certain CDM projects that destroy some of the most potent GHGs.

The trend in countries such as China and India will be to phase out these general tax holidays, reduce the rate of business taxation and introduce much more targeted incentives, whether for specific development objectives or for climate change transformation.

Survey highlights

- Tax holidays specifically designed to promote emissions reductions are most common in Asia, with Thailand, Singapore, Vietnam and China each responding that there were tax holidays available.
- Although general tax holidays are available in other countries, these apply to a broad range of new investments and were not included as provisions to reduce emissions by survey respondents.

Key insights

- Tax holidays are essentially blunt instruments that typically are not targeted at climate change issues in particular. Rather, they are more focused on economic activities and job creation.
- Tax holidays are not especially attractive incentives for inbound investors. They may provide relief from direct taxation, but they do not deal with the repatriation of taxes earned and may also carry additional restrictions.

Non-tax incentives

The use of non-tax incentives

Although the primary focus of this survey is tax, it is important to note that some countries — China being a notable example — have spent significant amounts of money to promote a more resource-efficient and low-carbon transformation through other incentive plans and mechanisms.

Although China is a dominant player in this transformation, its incentives are typically not delivered through the tax system. In China, companies with government support will receive a large portion of the stimulus, with more than 20% reportedly having gone to state-owned companies in the first round. The package also includes 12% for direct energy efficiency and environmental improvements, US$85 billion for investment in rail transport (a lower-carbon alternative) and US$70 billion for new electric and infrastructure.

South Korea is another strong supporter of green initiatives, also implementing these outside the tax system. Much of the country's spending will be on constructing more energy-efficient office and apartment buildings, along with retrofitting and updating public buildings and schools. Funds also will be used to build more railroads, clean up the country's four main rivers, support developers of environmentally friendly automobile engines, and provide two million energy-saving homes. Korea also introduced a significant investment package in the cleantech market.

Both cap-and-trade and carbon taxes give polluters a financial incentive to reduce their GHG emissions. Carbon taxes provide price certainty on emissions, while a cap provides quantity certainty on emissions. As noted, although the European Commission remains keen to see an EU carbon tax regime develop in the coming years, there are at present no regional or multi-country carbon tax regimes in place. The outcome of the Copenhagen meeting was set out in an "accord" signed by the parties that, although not launching any global tax framework, will likely result in a significant increase in the use of local tax systems in order to combat climate change.

"In 2009 China invested $34.6 billion in clean energy, which represents 30.5% of the total investments in clean energy by the G-20 and for the first time moved China to be ranked first in the world in clean energy investments. Currently, China's installed capacity is ranked number 2 in the world with 52.5 GW of renewable energy. China also has the world's most ambitious renewable targets."

Who's winning the clean energy race? The PEW Charitable Trusts, 2010

Taxes

"At the macro level, what we want is some certainty in terms of a long-term framework that we can sensibly plan within. While there has been a lot of discussion about climate and targets and so on, we do not yet have an established framework within which we can operate. Our first desire is that we get that framework. Part of that framework will be a tax framework, be that in terms of on one side a carbon tax, or on the other hand, how the mechanisms will work in terms of emissions trading and so on. What we need is a stable tax framework which underpins the longer-term economic framework. That's a priority for me, underpinning our wider corporate policy on this."

Chris Lenon, Rio Tinto

"In terms of border adjustments, I'm against it. I don't see that as the right approach; it's one that will lead to lots of practical problems. We've seen it in the past. The big risk is that it will also lead to an escalating trade war on a global level."

Karel De Gucht, European trade commissioner – January 2010

In an effort to reduce the incidence of environmentally damaging behaviors, governments have also used taxes levied on such activities. These include energy and carbon taxes, such as the EU energy taxation directive. This directive, in place for a number of years, requires that individual governments charge a minimum tax on certain forms of energy consumed by commercial organizations. Member states have added various exemptions or partial exemptions linked to the adoption of energy efficiency measures.

The most recent measure for encouraging energy-efficient business to reduce carbon emissions is the cap-and-trade system introduced by the EU. Called the Emissions Trading System (ETS), the measure is based on the framework of the international emissions trading structure established by the Kyoto Protocol in 1997.

The effect of the ETS has been to place a price on carbon emissions, thus making the emission of carbon dioxide a business cost for those energy-intensive industries covered by the scheme. This is perhaps one of the most direct action-and-reaction mechanisms that have been implemented in the worldwide effort to manage GHGs.

The European Commission also supports the implementation of an EU-wide carbon tax that would apply to businesses and consumers not covered by the ETS. A number of EU jurisdictions, including the UK and France, have already adopted legislation to help achieve that objective, although the French reform in this area would appear to have been suspended after the French constitutional court rejected its introduction in late December 2009.

Karel De Gucht, the EU trade commissioner, warned in January 2010 that a carbon border tax could lead to a "trade war" as he rejected a policy that has gained traction in Europe following the December 2009 Copenhagen Summit on Climate Change. The underlying idea of the EU proposals is that an import tax should be levied on goods from countries that do not show similar levels of ambition in fighting global warming. The debate in Europe on a so-called border adjustment tax was reinvigorated after the Copenhagen summit resulted in a voluntary accord that fell well short of the EU's stated goals for emissions reductions.

Tax as a repricing mechanism

Carbon taxes and carbon pricing

Commentary and observations

Measures to discourage emissions by business fall into two main categories:

1. **Carbon taxes:** Effectively taxing the carbon dioxide emissions from burning fossil fuels
2. **Carbon pricing:** Using methods such as cap-and-trade systems aimed at putting a price on carbon

Carbon taxes are expected to lend predictability to energy prices and can be implemented sooner than more complex cap-and-trade systems. They tend to be more transparent and easily understood – two attributes that typically translate into public support more readily than complicated alternatives.

No global tax framework

While the Copenhagen accord is not legally binding, it is likely that following Copenhagen and the further commitments that were made at Cancun, individual signatories will be putting in place some kind of domestic legislation to document and frame policies to be implemented to reduce their GHG emissions. As a result, for the first time there is a clear likelihood that major developing economies such as China, India, Brazil and Indonesia will begin to use their tax systems to penalize the emission of GHGs by businesses operating in their territories. To date such taxes have been largely restricted to Europe and in particular the EU member states.

National carbon tax regimes to the fore

In essence, it has historically been the role of country-level legislation to provide the first wave of carbon taxes. Examples include Finland (1990), Sweden (1991), and Great Britain (2001) as well as local approaches taken in Boulder, Colorado (USA) (2007); British Columbia (2008); and Quebec. Whether the use of a carbon tax is effective at reducing emissions is unclear. In Sweden, for example, it was estimated that the country's carbon dioxide emissions dropped 20% between 1991 and 2000 after the introduction of the tax, which was also credited with spurring a significant move from fossil fuels to biomass. This contrasts directly with the experience of Norway, for example, where emissions have risen by at least 15% since the country established a carbon tax of $65 per ton in 1991.

Carbon pricing

Kyoto marked the first major collective step in introducing carbon pricing on a global scale via the introduction of a framework for international agreement. The Kyoto Protocol was ratified in 1997 by 36 developed and 137 developing countries for the purpose of driving reductions in GHG emissions worldwide. The 36 developed countries collectively committed to delivering 5% emissions reductions by 2012.

Although there are no specific targets for the developing countries, there are trading and offset schemes that can ultimately be leveraged for their benefit. Specifically, where domestic action fails to meet targets, developed countries can use three market mechanisms to meet any shortfall:

1. **Trading:** buying additional Kyoto units from other countries
2. **CDMs:** funding emissions-reduction projects in developing countries to generate Kyoto units
3. **Joint implementation:** funding emissions-reduction projects in other developed countries to secure additional Kyoto units

These options are aimed at reducing emissions in a cost-efficient manner and enabling the development or transfer of technology to developing countries.

However, we note that the emissions restrictions that Kyoto established will be expiring in 2012 (at the end of the first commitment period). Given that the 2009 Copenhagen accord did not deal with either the future or the reform of these restrictions, the future of these mechanisms is in some doubt. In the absence of such "internationally agreed" targeted plans, countries may resort to their tax systems as an alternative means of delivering incentives. This approach has already resulted in increased complexity for the tax director, especially in regard to the challenging nature of the tax systems in many of the developing countries where such activities will have been carried out in the past.

Survey highlights

- Of the 36 countries surveyed, 13 have some kind of emissions cap in place.
  - The emissions cap is part of a national effort in 11 countries.
  - The US and Canada have sub-national government caps.
- The same 13 jurisdictions (including the US and Canada) also have carbon-trading systems.
- 12 of the surveyed countries have some sort of carbon tax. Two countries, the US and Canada, have sub-national taxes on carbon.
  - In Canada, the province of British Columbia has a broad-based carbon tax on fossil fuels.
  - In the US, local systems are also being piloted. The city of Boulder, Colorado, for example, has a tax on electricity designed to reduce carbon emissions.

Table 1: Kyoto Annex 1 and Non-Annex 1 countries on cap-and-trade*

Country	Kyoto Annex 1	National cap-and-trade schemes	Draft legislation	Local caps	Carbon or energy tax
Angola					
Australia	Yes	Yes (a)			
Bahrain					
Botswana					
Brazil					
Canada	Yes			Yes	(b)
China					
Denmark	Yes	Yes			Yes
Finland	Yes	Yes			Yes
France	Yes	Yes			Yes
Germany	Yes	Yes			Yes
India			Yes		
Ireland	Yes	Yes			Yes
Italy	Yes	Yes			Yes
Japan	Yes				
Kenya					
Korea					
Mexico					

Country	Kyoto Annex 1	National cap-and-trade schemes	Draft legislation	Local caps	Carbon or energy tax
Morocco					
Nigeria					
Netherlands	Yes	Yes			Yes
Norway	Yes	Yes			Yes
Russian Federation	Yes				
Saudi Arabia					
Senegal					
Singapore					
Slovenia	Yes	Yes			
South Africa					
Spain	Yes	Yes			Yes
Taiwan			Yes		
Thailand					
Tunisia					
United Arab Emirates					
United Kingdom	Yes	Yes			(c)
United States	Yes (d)		Yes	Yes	(e)
Vietnam					

(a) Legislation was introduced but was defeated on 2 December 2009.
(b) British Columbia has a carbon tax.
(c) "Climate change levy" on certain types of energy, but is not based directly on emissions.
(d) The US is an Annex 1 country but did not ratify the Kyoto Protocol.
(e) Certain municipalities have limited carbon taxes.

Key insights

- For all the talk surrounding global cap-and-trade systems, efforts are stalled in Australia and in the US, and the carbon trading scheme that Japan is promoting is a voluntary program.
- As of the beginning of 2010, the only functioning cap-and-trade system is the EU's emissions trading scheme.
- In China, India and Brazil, three of the four BRIC nations, there is no carbon cap or carbon tax. The most effective incentive thus far has been the CDM rather than any tax-specific incentive. The CDM is scheduled to expire in 2012, however, and alternative programs that would be as effective for developing countries have yet to be defined.
- To date – and especially in light of the Copenhagen results – there are few if any positive signals that a global cap-and-trade program will occur. There may be new national caps or cap-and-trade schemes such as that being considered by the US, but no comprehensive global carbon trading system under development. This results in a considerable increase in complexity coping with a variety of national schemes, each with its own tax treatments.

Indirect taxes

Commentary and observations

Enhanced recovery of VAT is a potentially effective incentive because it can enhance the cash flow of the business investing in the cleantech equipment and provide profits free of local tax. However, the overall value of such an incentive is adversely impacted by the fact that it does not improve the ability of the company creating the profit to remit it without significant withholding taxes.

Our survey results demonstrated the existence of many such measures designed to encourage the local consumption of goods or restricting VAT exemption on exports in relation to certain project industries. Although this is not currently targeted at climate change specifically, the Copenhagen accord could increase the use of VAT as a measure to make sure that clean technology equipment, for example, is used in the country where it is manufactured. Likewise, customs duties may be used as incentives for importing key components that advance cleantech in some developing countries.

Survey highlights

Countries have chosen to reduce several of their above-the-line taxes as part of a variety of efforts to drive the resource-efficient and low-carbon agenda and other stimulus initiatives. Some have reduced VAT rates to promote resource efficiency and the generation of renewable energy. Others, including a number of US states and three non-US countries, are reducing property taxes or reducing customs duties and import taxes. A few — France, Germany and Australia — are reducing hydrocarbon taxes and other taxes on renewable or low-carbon fuels.

- Eight of the surveyed countries have reduced VAT rates.
- Sales tax exemptions comprise 27 of the 32 "other provisions" administered by tax offices in US states — analogous to reduced VAT rates in other countries.
- Korea's additional input VAT credit promotes the recycling of waste and scrap materials.
- Germany has reduced value-added taxes on bioethanol.
- Of the 42 provisions reducing property taxes, 37 are offered by states in the US.
- Three national governments offer property tax reductions: China and Korea have reduced indirect taxes on motor vehicles and France has reduced business taxes on qualifying renewable energy and energy-efficient assets, including buildings and machinery.

Key insights

- Both developed and developing countries use indirect taxes as a mechanism for addressing resource-efficient and low-carbon behaviors, such as relaxing customs duties on energy-saving parts and materials.
- Jurisdictions where VAT on capital goods is either non-recoverable or partially recoverable, are using enhanced recovery to incentivize businesses to acquire cleantech equipment.

Messages for the tax function to consider

As set out earlier, we believe that an operational framework around climate change can help Tax directors navigate successfully the many aspects which need to be considered and also both identify the best tax effective strategies to adopt and ensure advantage is taken of the many incentives that are available.

The framework consists of four aspects:

Management	Action	Communication	Policy

"Here we discuss four fundamental messages for every Tax professional that suggest that the corporate climate change and sustainability strategy and initiatives should be firmly connected to the Tax function. Coordination between Tax professionals and those executing the sustainability strategy is imperative in order to effectively manage risk and liabilities, and secure relevant tax incentives."

Paul Naumoff
Global and Americas Climate Change and Sustainability Services and Cleantech Tax Leader

1. Management: *manage carbon taxes and related environmental taxes efficiently*

In many jurisdictions, some form of tax on carbon is on the horizon, and the tax department needs to ensure that the business understands what this means and have the systems and infrastructure in place to ensure that the right amount of tax is paid, relevant exemptions are claimed and the business is not exposed to risk through non-compliance.

2. Action: *ensure that the business is aware of and claims all credits and incentives available in connection with more resource-efficient and low-carbon programs*

There are a growing number of tax and related incentives being introduced around the world to encourage businesses to drive operational efficiency and low-carbon activity. The tax department must have a clear dashboard that reflects these incentives along with the channels for communicating with the part of the business that is evaluating various investment opportunities in relation to the more resource-efficient and low-carbon transformation.

"We often make investments which take five-plus years from inception to payback, particularly in greenfield situations. So, having an understanding of where both the economic and tax policy environment is going to be is a very important part of business.
At the macro level, what we want is some certainty in terms of a long-term framework. Our first desire is that we get that framework. Part of that framework will be a tax framework."

Chris Lenon, Global Tax Director
Rio Tinto

At a minimum, the tax team should be able to input its knowledge of worldwide incentives available in the context of the return on investment calculations being run against proposed projects in the resource-efficient and low-carbon sphere. One of the most critical functions of the sustainability-aware tax department will be to actively monitor and manage the evolution of these incentives and regularly brief the business on their relevance and effectiveness in minimizing the after-tax cost of the evolving business drive toward operational efficiency and low-carbon activity.

3. Communication: *focus on developing strong communication within the business in relation to the tax implications of the transformation to a more resource-efficient and low-carbon economy*

A leading tax department should have the ability to see information on new taxes and incentives into the business and receive warning of new projects under consideration as part of the drive to operational efficiency and low-carbon activity. This should enable timely input to decision makers on potential projects and enable claims for incentives to be made appropriately.

This may involve new processes or systems and will certainly involve much more engagement of Tax with other parts of the business that may be driving operational efficiency, climate change agenda and (or) sustainability strategy.

4. Policy: *actively engage in tax policy developments in the cleantech and climate change areas*

The availability of quality information on the evolving landscape for environmental taxes and incentives should put the tax team in a good position to offer input from a tax policy perspective.

A leading tax team should be able to provide the business with a current-state dashboard of environmental taxes and incentives, and also to influence a future state as policies ebb and flow in the cleantech and climate change areas. The only way to affect the tax policy process in a way that supports business goals is to be involved and provide meaningful input early and often. This is particularly important in such fast-moving areas as cleantech and climate change.

Insightful tax teams will be forward-moving and will be addressing such questions as:

- Which entity will fund, manage and earn the return on the investments in clean technology or other initiatives?
- Do transfer pricing policies ensure that the savings created end up in the right places?
- How do I make sure that decisions related to cleantech and cost reductions are made on an after-tax basis?
- How do I balance the shorter-term deduction at a local level against a longer-term benefit at a principal company?
- What is the impact of tax planning on investment decisions with uncertain carbon cap and trading regulations?
- How do I get Tax involved in what is currently a fragmented process?

By covering these four aspects in a planned and integrated way, the tax team can move forward with confidence as new opportunities, regulations and changes arise around the world.

The lexicon of green

In addition to the many operational, environmental, theoretical and administrative changes that have come on the heels of greening, a new corporate lexicon has arisen.

Cap-and-trade; carbon footprint, carbon credits and offsets; sustainability lifecycle; Kyoto Protocol and the clean development mechanism are just a few of the words and concepts that have joined typical business-speak to make up the green vernacular.

Cap-and-trade

This term refers to the commitment to responsible limits on GHG emission, based on the "cap" as the maximum quantity of GHG that a region can emit in a year and "trade" as the right of companies to auction and swap permits to emit GHG among themselves.

Carbon footprint

This is the measure of the impact human activities have on atmospheric concentrations in terms of the tons of carbon dioxide (CO2) produced as a by-product.

Carbon tax

This is a shortened term for a carbon dioxide tax, which is levied on the carbon content of fuels and, thus, the emissions from burning fossil fuels, with money collected typically returned in the form of rebates or cuts to personal and business taxes.

Carbon offsets

This refers to a GHG emission reduction of a specific quantity, to be regarded as a real environmental commodity, not a donation or an investment in future projects; also obtainable by rewarding or subsidizing someone else's carbon-saving behavior.

Cleantech

This is defined as a diverse range of innovative products and services that optimize the use of natural resources or reduce the negative environmental impact of their use. This creates value by lowering costs, improving efficiency, or providing superior performance.

Clean Development Mechanism (CDM)

This is a mechanism that allows developed countries to earn carbon permits by funding emission-reduction and (or) carbon-abating projects in a developing country.

European Union Emission Trading System (ETS)

A cap-and-trade system introduced by the EU. Called ETS, the measure is based on the framework of the international emissions trading structure established by the Kyoto Protocol in 1997.

Greenhouse gas (GHG)

This is often referred to as GHG, and the most common GHG in the current discussion is CO2 (carbon dioxide). Other GHGs are methane (CH4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6).

Joint implementation

Another project-based Kyoto mechanism that allows one developed country to invest in a project that reduces net emissions in another developed country, transferring the initial allocated amount from the host party to the investor party.

Kyoto Protocol

This is an action addendum to the UNFCCC protocol that was signed in Kyoto in 1997 and came into effect in 2005, setting out the framework for stabilizing atmospheric concentrations of GHGs.

Sustainable development

The UN-commissioned Brundtland Report provided the first and the most often quoted definition of sustainable development: "*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*" In practice, this is commonly understood to mean a more efficient use of natural resources.

UNFCCC

The United Nations Framework Convention on Climate Change was formed in recognition that climate change is a global challenge requiring an international response; signed by 192 member states and effective as of 1994.

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