

WORLD COMMERCE REVIEW

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The Square Mile and Islamic Finance

Kazi Hussain on how the City is maintaining
its position



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**The Future of the
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Worrying Times for the Free Market

The international financial crisis cast a deep cloud over the Spring IMF/World Bank meetings held in Washington, but there is no sense of panic. The IMF forecasts a mild recession in the US, a slowdown in the UK and Europe, with the slack picked up by the still-strong growth of the BRICs: Brazil, Russia, India and China.

The IMF forecasts clarify what we know, but the fact that they say so means that governments have got to take notice and confront reality. Unfortunately, rather than accept that loose monetary policy and the resulting surge in lending was a deliberate policy, blame is being placed on the banking sector. There is a demand for more regulation, despite the fact that Basel 1 provisions encouraged banks to securitise and take risks off the balance sheet. It was this encouragement that led to the well-publicised failures.

Overdoing the extra regulation at this point could impede recovery. And any regulation, if what is in place is a guide, will be circumvented in the future. And who is to be the regulator? There is a claim that the IMF is the natural choice. However, the IMF in the run up to the credit crunch was reporting that the risk was low and was not issuing warnings that the money markets were about to enter the worst conditions for decades.

The credit crunch is proving to be broader, deeper and more protracted than in previous downturns, due to the degree of securitisation and leverage in the financial system. The work of the authorities should be to concentrate on rebuilding confidence and liquidity. It should not be to nationalise or to subsidise the banks. The authorities are already providing extra liquidity, and buying assets from banks should be at prices that the taxpayer does not lose. Any knee-jerk regulation could reduce credit growth more than expected. Better regulation is needed, not more.

There is a demand for financial sector regulation at the same time as demand for regulation to prevent global warming. Political posturing and short-term thinking has already led to a rapid move towards biofuels, which is having a major effect on food production and prices. The worsening global food shortages are adding urgency to a last-ditch attempt to secure agreement in the Doha Round of trade talks that has set powerful emerging market countries, such as Brazil and India, against the US and EU. Six nations— the US, EU, Brazil, Canada, Japan and Australia — are believed to have agreed a formula for setting tariffs on agriculture and industrial goods. A doubling of food prices in two years has pushed 100 million people into deeper long-term poverty.

Add to this misconceptions about the role of international trade causing poverty in the Third World and growth in greenhouse gasses and you have a strong incentive for politicians to favour increased state action. What must not be allowed to happen is a disillusion with the market system in general. This would result in protectionist trade policies, lower growth and impoverishment in much of the world.

WCR looks forward to watching these developments over the next few months. ■

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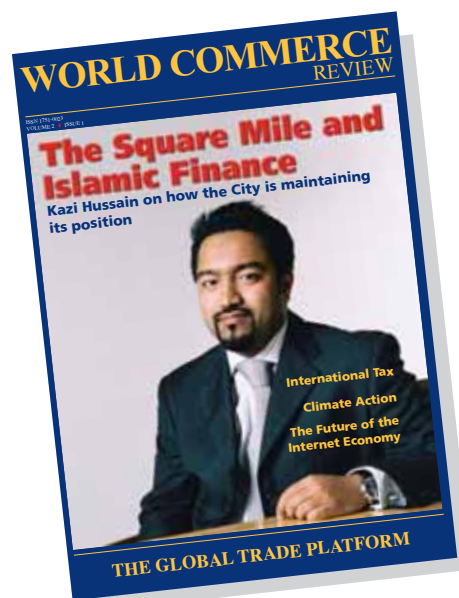
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Contents

Foreword	1	Private Jet Options Explained	44
Contents	2	David Macdonald	
Crystal Ball Gazing in the 21st Century: and Europe Will Decline	4	XBRL – Increase Transparency in the Financial Markets	46
Ruth Lea		Liv Watson and Neal Hannon	
The Square Mile and Islamic Finance	8	A Case Study on the Implementation of XBRL for Research & Analysis	49
Kazi Hussain		Wilson So	
Developing Carbon Capture and Storage in the European Union	12	Ernst & Young's Global Transfer Pricing Survey	50
Stavros Dimas		Oliver Wehnert	
Carbon Sequestration Leadership Forum: An International Response to Climate Change	15	Success of Specialised Investment Funds in Luxembourg	52
Barbara McKee		Thibaut Partsch and Valérie Mantot	
Carbon Capture and Storage – Essential to Contain World Climate Change	17	Still Patchwork Instead of Systemic Tax Reform – 2008 Corporate Tax News from Finland	55
Jeff Chapman		Outi Ukkola	
Trade Can Save the Climate	21		
Peter M Robinson			
A Review of the EU ETS: A Step Forward With Some Major Question Marks	22		
Henry Derwent			
Will EU Emissions Trading Finally Deliver?	24		
Henrik Hasselknippe			
Investing in Climate Change	26		
Mark Fulton			
The Internet Economy: Towards a Better Future	28		
Susanne Huttner			
Europe: The New Giant of the Global Internet Economy	30		
Viviane Reding			
Shaping Policies for Creativity, Confidence and Convergence in the Digital World	34		
Joseph Alhadeff and Subramaniam Ramadorai			
Telepresence@InfoComm08	36		
Carol Zelkin			
Collaboration Is Today's Competitive Weapon	39		
Francesca Jones			
EBACE2008 Brings Together European Business Aviation Industry for Annual Three-Day Event in Geneva	42		



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Crystal Ball Gazing in the 21st Century: and Europe Will Decline

Ruth Lea is the Director of Global Vision and Economic Adviser to Arbuthnot Banking Group

Globalisation is changing lives

For all the problems with the current global financial system and protectionist threats, there are few reasons to believe that the march of globalisation will be stopped its tracks. The profound shifts in economic and political power from the developed world to the developing giants of China and India, resulting from globalisation, will surely remain a major force reshaping our lives in the 21st century. Indeed this observation has become something of a cliché.

The rise of China and India as major economic and political powers should be, however, seen as a reawakening rather than a first-time revolution. A little under 200 years ago, in 1820, China produced about a third of the world's output and India produced around 16%. The "big four" European countries accounted for just 17% of output and the fledgling US accounted for less than 2%. By 1950 the US share had risen to 27%, China's had fallen to 5% and India's to 4%. The European big four claimed 19%.¹

By 2006 the shares of global output had changed dramatically. Europe's big four accounted for less than 13% and the US's share had slipped to 20%, whilst China's had risen to 15% and India's to 6%.²

Moreover, this shift from the developed western countries to the rising giants of China and India is expected to continue. According to the UK Treasury China's share will rise to nearly 20% by 2015 - on a par with the US's relatively stable share. The EU25's share will have fallen to 17% in 2015, compared with 26% in 1980, and India's will have picked up to 8%

Shares of global output (%) (Purchasing Power Parity terms)

	1980	2003	2006	2015
EU25	26	22	20	17
US	20	21	20	19
Japan	7	7	6	5
India	3	6	6	8
China	3	13	15	19
Brazil	3	3	2	3
Russia	4	3	2	2
Other	34	25	27	27
Total	100	100	100	100

Sources: HM Treasury, *Global Europe, full-employment Europe, October 2005 for 1980, 2003 and 2015*. World Bank, *World Development Indicators database, 2007 for 2006*

Whilst few doubt that the world is currently experiencing a period of rapid change and economic integration, globalisation, the increased global sourcing of goods and services and increased global flows of capital, is not, of course, new. The developments since the Second World War represent but the latest globalisation phase in modern history.

The century leading up to 1914 saw rapid growth in trade, driven by major advances in industrial and transport technologies. This was accompanied by growing international flows of capital and labour. These trends were reversed by the outbreak of the First World War, and the protectionism and depression of the 1920s and 1930s. Globalisation was in retreat. But following the Second World War, successive GATT (now the WTO) agreements resulted in the progressive lowering of trade barriers, helping to facilitate a second major phase of globalisation. During this period the world economy delivered unprecedented rates of economic growth. But, in many ways, the most recent 15-20 years of this post-war globalisation phase has been the most dramatic.

This, latest, period has been marked by several distinctive trends. They are the accelerated reductions in transport and communications costs; greater international specialisation driven by continued liberalisation; the IT revolution and the incalculable significance of the internet in

transmitting information and ideas; the increasing trade in services due to the digital revolution and, finally and arguably the most significant, the increasing integration of major emerging markets into the world economy.³

Taken together these trends make the latest phase of globalisation the fastest and broadest in scope. A truly global, interconnected, economy has developed. And, despite the current global economic difficulties, it is difficult to see how the forces of globalisation can be reversed. The economic and technical drivers of integration, if anything, are growing stronger. Globalisation develops its own self-sustaining momentum.

But could anything stop it? One possibility is that a serious world recession could be leading to beggar-thy-neighbour protectionism. But a serious world recession is still not expected despite the current slowdown in world growth and possible recession in the US. Another possibility is of there were to be a major geopolitical clash between, for example, the US and China. Such events can never be ruled out.

Demographic trends up to 2050

One significant factor, which is all too often overlooked, behind the shift in political and economic power in the 21st century will be demographic developments. By the middle of this century the UN's demographers expect some quite staggering changes.

The UN expects the world's population to reach 8.0 billion in 2025 and 9.2 billion in 2050 compared with 6.1 billion in 2000, 6.5 billion in 2005 and just 2.5 billion in 1950. In the century from 1950 to 2050 the UN, therefore, expects the population to have grown more than three and half fold.⁴

In the half century from 2000 to 2050, population is expected to increase by 3.1 billion – around 50% - most of which will be accounted for the rises in Africa (1.2 billion) and Asia (1.6 billion). 600 million of the increase is accounted for by India, the population of which is expected to overtake China's by 2025. Very few major countries are expected to experience significant population falls over this period – though Japan and the Russian Federation are the two most obvious exceptions. Japan's population is expected to slip from 127 million in 2000 to 103 million in 2050. The corresponding data for Russia show a more severe fall - from 147 million in 2000 to 108 million in 2050.

Data for the working age population are, however, more relevant when considering the economic potential of individual regions and countries. The pattern of regional change is, if anything, more pronounced than for total population. The falls in the working age populations by 2050 of Japan and much of Europe (including Russia), with their low fertility rates and ageing populations, are particularly marked.

These dramatic population shifts will inevitably have major economic implications. The economic centre of gravity has already shifted in a quite remarkable way from the west, especially Europe, to the emerging nations of the east. By the middle of the 21st century this can only be more marked. Europe's relative economic clout will diminish further. Businesspeople know this already.

Winners and losers in the 21st century...

The winning businesses in the 21st century will be the free and flexible, unencumbered by heavy regulation. They will be situated in those countries that can make legislative decisions quickly and are free to make the trading arrangements best suited to their needs.

The "received wisdom", especially in the EU, has tended to be that the size of the European "domestic" market is the crucial factor ►►

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▶ when it comes to winning business. The EU, therefore, has spent a great deal of energy in pursuing economic integration. It has, for example, actively pursued the completion of the single market, which aims to break down the internal non-tariff barriers to trade as the formation of the EEC's customs union, back in 1957, removed internal tariff barriers.

Working Population (aged 15-64 only), million

	1950	2000	2025	2050	Change: 1950 to 2000	Change: 2000 to 2050
World	1,538	3,853	5,241	5,875	2,315	2,022
Africa	123	445	828	1,300	322	855
Asia:	842	2,358	3,217	3,398	1,516	1,040
China	344	866	988	860	522	-6
Japan	50	87	72	52	37	-35
India	221	632	977	1,116	411	484
Europe:	360	494	462	384	134	-110
UK	34	38	41	41	4	3
France	28	38	41	40	10	2
Germany	46	56	50	42	10	-14
Italy	31	39	37	30	8	-9
Spain	18	28	30	24	10	-4
Russian Fed.	67	103	87	66	36	-37
Poland	16	26	24	17	10	-9
The Americas	205	536	707	763	331	227
USA	102	188	225	249	86	61
Brazil	30	113	154	160	83	47

Source: UN, Department of Economic and Social Affairs, World Population Prospects, the 2006 revision. Medium variant.

regional customs union and focussing on the completion of the single market, are not just old-fashioned. They increasingly damage the international competitiveness of EU businesses and their freedom to compete.

Firstly, the existence of the customs union, with its common external tariff, prevents individual member states from developing their own bilateral trade deals with favoured trading partners. Britain, for example, with its unique international links and dependence on trade for its prosperity, would benefit from developing bilateral free trade relationships with many non-EU countries including the USA and Commonwealth countries including Canada, Australia and, crucially, India. But it cannot.

The Commonwealth, no longer redolent of Empire, could develop into an economic powerhouse in its own right. Commonwealth Advantage, a go-ahead Canadian organisation with the objectives of creating new trade opportunities and strengthening ties with other Commonwealth nations, sees the Commonwealth as a true economic bloc, where the commonalities of language, law, accounting systems and business regulations can present a 15% cost advantage over dealing with countries outside the Commonwealth.⁷ With all its commonalities, Commonwealth Advantage claims the bloc could be hailed as the world's first "global domestic economy". And India's Commerce and Industry Minister Kamal Nath has called the Commonwealth "the new paradigm", saying that it is the ideal platform for business and trade.

Secondly, the EU's single market, whilst bringing some benefits for businesses, has developed a costly body of regulations that, by the very nature of the

EU, are difficult to repeal or change. Current estimates of the costs and benefits of the single market for EU member states are available from EU Commission sources. Günter Verheugen (Vice-President of the European Commission, responsible for enterprise and industry) has estimated the cost of complying with EU regulations at as much as €600 billion a year. This estimate is equivalent to 5.5% of EU GDP – equivalent to the size of the Dutch economy.⁸

Meanwhile the benefits are much lower than the costs. According to the Commission:⁹

"Over the last 15 years the single market has increased the EU's prosperity by 2.15% of GDP. In 2006 alone this meant an overall increase of €240 billion - or €518 for every EU citizen - compared to a situation without the single market."

The costs of the EU's single market, therefore, comfortably outweigh the benefits by a factor of about 2¹/₂ to 1. Given the red-hot competitive pressures that businesses face this is akin to playing tennis wearing diving boots.

The winners of the 21st century will continue to be the "Singapore" and the "Switzerland", as identified by Gideon Rachman, providing they can retain their economic freedom and business flexibility. But for those countries facing demographic decline, unable to optimize their trading relationships in a new global world, and hampered by expensive regulations it is hard to see how they can avoid relative decline. If the EU continues to bury its head in the sand concerning the need for genuine and radical reform, and loosen up its obsessively centralising and controlling tendencies, EU member states will surely be losers in the 21st century. ■

But this "received wisdom" has quite simply been overtaken by the forces of globalisation. The EU's thinking has a distinctly old-fashioned mid-20th century tone to it. Open, multilateral trade relationships, combined with mutually beneficial bilateral trade agreements are now the way forward. Globalisation has not made the size of the domestic market totally irrelevant for business, but it has clearly diminished its significance, whilst increasing the importance of the ability to respond flexibly to changing business conditions.

As Gideon Rachman wrote in the *Financial Times* recently:^{5, 6}

"...taking pride in the sheer size of your country is increasingly anachronistic. Traditionally...a big country meant a bigger market and so more trade and wealth. But...globalisation has opened up markets across the world. China and India are getting bigger largely because they have access to the markets of the developed world, not because of the size of their domestic markets. Small countries can trade their way to success more swiftly. Think of Singapore or Switzerland."

And he went on to say:

"...since the traditional disadvantages of being a tiddly country are disappearing, you are left with just the advantages...Governments in small countries...find it easier to craft and implement policy."

He also pointed out that small countries dominate almost any league table of national welfare. He quoted the IMF's ranking of countries of GDP per capita which showed that four of the five richest countries in the world have populations of less than 5 million.

...and the EU will be a loser

The EU's economic policies, underpinned by the anachronistic

1. Philip Stephens, "A global response is needed to the shifting world order", *Financial Times*, 30 November 2007.
 2. World Bank, World Development Indicators database, 14 September 2007, PPP data.
 3. Responding to global economic challenges, UK and China, Ministry of Finance, PRC and HM Treasury, October 2005.
 4. UN, Department of Economic and Social Affairs, World Population Prospects, latest data available from www.un.org/esa/. Medium variant.
 5. Gideon Rachman, "For nations, small is beautiful", *Financial Times*, 4 December 2007.

6. Ruth Lea, "Globalisation is here to stay and Britain must be free to respond", *Global Vision*, December 2007, available from www.global-vision.net.
 7. Commonwealth Advantage's website is www.the-ca.ca.
 8. Ruth Lea, "A new trading relationship for Britain with the EU", *Global Vision*, March 2008, available from www.global-vision.net.
 9. Available from www.ec.europa.eu/internal_market/.

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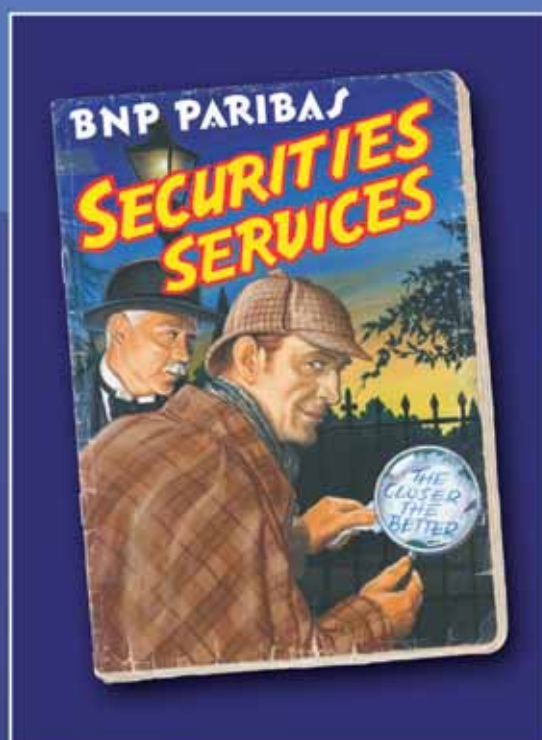
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The Square Mile and Islamic Finance

Kazi Hussain is Director - Islamic Finance at Europe Arab Bank plc

Islamic finance has existed for nearly four decades but in recent years the growth has been dramatic with a move from niche to more mainstream. According to KPMG, there are now circa 270 Islamic financial institutions worldwide with assets estimated at over \$265 billion, and other sources have quoted financial investments over \$500 billion. The growth rate of the Islamic finance sector is estimated to be around 10%-15% per annum.

Islamic finance products are providing acceptable alternatives to conventional finance, making it possible for western corporates and governments to access capital from a growing pool of GCC liquidity through Islamic structures. Sharia'a based products have allowed the western investors to invest in Islamic products as a viable alternative to conventional investment products, which has provided additional diversification opportunities. Islamic finance has given Islamic investors access to a range of traditional western investment opportunities across the capital structure. A large proportion of western conventional institutions have Islamic finance capability and standalone Islamic banks continue to grow. Institutions such as the Islamic Development Bank and bodies such as AAOIFI¹ and IFSB² are trying to create a set of rules to govern the way Islamic institutions operate and develop their products.

One of the fundamental developments in the history of banking can be traced back to the development of the coffee houses in the City of London where traders and bankers developed the initial steps of financial intermediation. This development was then assisted by the construction of the London Royal Exchange in 1865 by Sir Thomas Gresham which gave more importance to the "City" as a centre of commerce. At that time moneychangers were called bankers, though the term "bank" usually referred to their offices. The hierarchical order among professionals meant bankers were at the top, as their business was undertaken with heads of state, next were the city exchanges, and at the bottom were the pawn shops or "Lombards". The term "City of London" refers only to the area occupied by the original old walled city built by the Romans. The old city covered an area of roughly one square mile and was surrounded by an eighteen foot high wall and a defensive ditch. The walls have long since gone but this area has become one of the major financial centres of the world; it is still referred to as "The Square Mile" or "The City".

London still has the headquarters of more than 100 of Europe's 500 largest companies, in addition more than 25% of the of the world's largest financial companies have their European headquarters in London.

In terms of business the London foreign exchange market is the largest in the world, with an average daily turnover in excess of \$500 billion, more than the New York and Tokyo exchanges. More than 550 international banks and 170 global securities houses have set up offices in London. Frankfurt, Paris and New York have substantially fewer. London is the largest market for derivatives traded over-the-counter with more than 35% of global turnover. The British capital is the world's largest fund management centre, managing almost half of Europe's institutional equity capital worth \$5,500 billion. Furthermore, 55% of the global foreign equity market and 70% of Eurobonds are also traded in London.

In addition to the above, London has one of the most prestigious and well respected stock markets; it boasts the home of Euronext.liffe, the world's leading exchange for euro short-term interest rate derivatives and equity options. The London Metal Exchange (LME), the world centre for non-ferrous (non-iron) metal trading, is also based in the City. London is in addition one of the world's largest international insurance markets in which Lloyd's of London is the leader, providing specialist insurance services to businesses in over

189 countries. Of course, due to the City being the centre for such global commerce there could only be one location for the Baltic Exchange, which is the only established and self-regulated global market place for shipbrokers.

The reasons behind London maintaining this position as a key global financial centre are many but the following key factors have lent themselves to strengthening London's position (these are not ranked in order of importance);

1. There is a well regulated and transparent financial infrastructure with the key players in that regulation being FSA³ and Bank of England, and UK Government Treasury;
2. It offers a wide range and availability of skilled financial professionals;
3. Britain offers a stable political and economic background for business;
4. Taxation regulations in Britain have made it attractive for financial institutions to develop and grow.
5. Innovation – the City offers highly creative finance personnel, an open attitude by regulators, banks and other bodies in developing new products and infrastructure
6. English Law – the English legal system has arguably proved to be the choice of jurisdiction for commercial transactions

Given the benefits of the City outlined above, as Islamic finance began to emerge as an active asset class, the City of London was well

“Islamic finance products are providing acceptable alternatives to conventional finance”

placed to take advantage of this momentum. The tremendous liquidity of the Gulf as a result of the rising oil price and the strong demand from a portion of these investors to undertake Islamic transactions meant that this liquidity required larger deeper markets to operate in. The history of the City of London, the ability to innovate and structure new products, with an open mind from all involved, and the depth and critical mass

of the London markets for new listings, when added to the tendency for documentation for Islamic transactions to be completed under English law, has meant that the London market has become an influential financial centre.

It offers a range of products and services such as Islamic treasury, sukuk structuring, structured trade finance, asset management and private banking. Given also that Islamic clientele have not necessarily been from the traditional Islamic markets, London has acted an ideal gateway for Islamic finance transactions. Added to this has been the strong push from the government. During the inaugural Islamic Finance and Trade Conference in London, June 2006, the Chancellor gave the keynote speech in which he proposed to make Britain the gateway to Islamic finance and trade. The then Chancellor and now Prime Minister of Britain, Gordon Brown, highlighted the regulatory and tax-regime reforms required to support the development of Islamic products and Sharia'a compliant finance arrangements. In addition he also announced proposals for expanding trade for emerging market countries and increasing trade with Islamic trading partners. The FSA has issued four licenses to Islamic banks in London and a fifth is on its way, notwithstanding the launch of a Takaful based insurance entity and various hedge funds. This has clearly differentiated the London market from the rest of the western markets.

Recently, government reforms have been designed to help “level the playing field” for fund-raising in the wholesale markets and moves to encourage Muslim home-owners to buy Sharia'a-compliant mortgages. These reforms include new legislation in the Finance Bill 2007 to facilitate the UK issuance and trading of sukuk. In the meantime it is also considering the Stamp Duty Land Tax reforms for sukuk so as to allow the playing field to be levelled once again for corporate and sovereign issuance of sukuk. The UK government is



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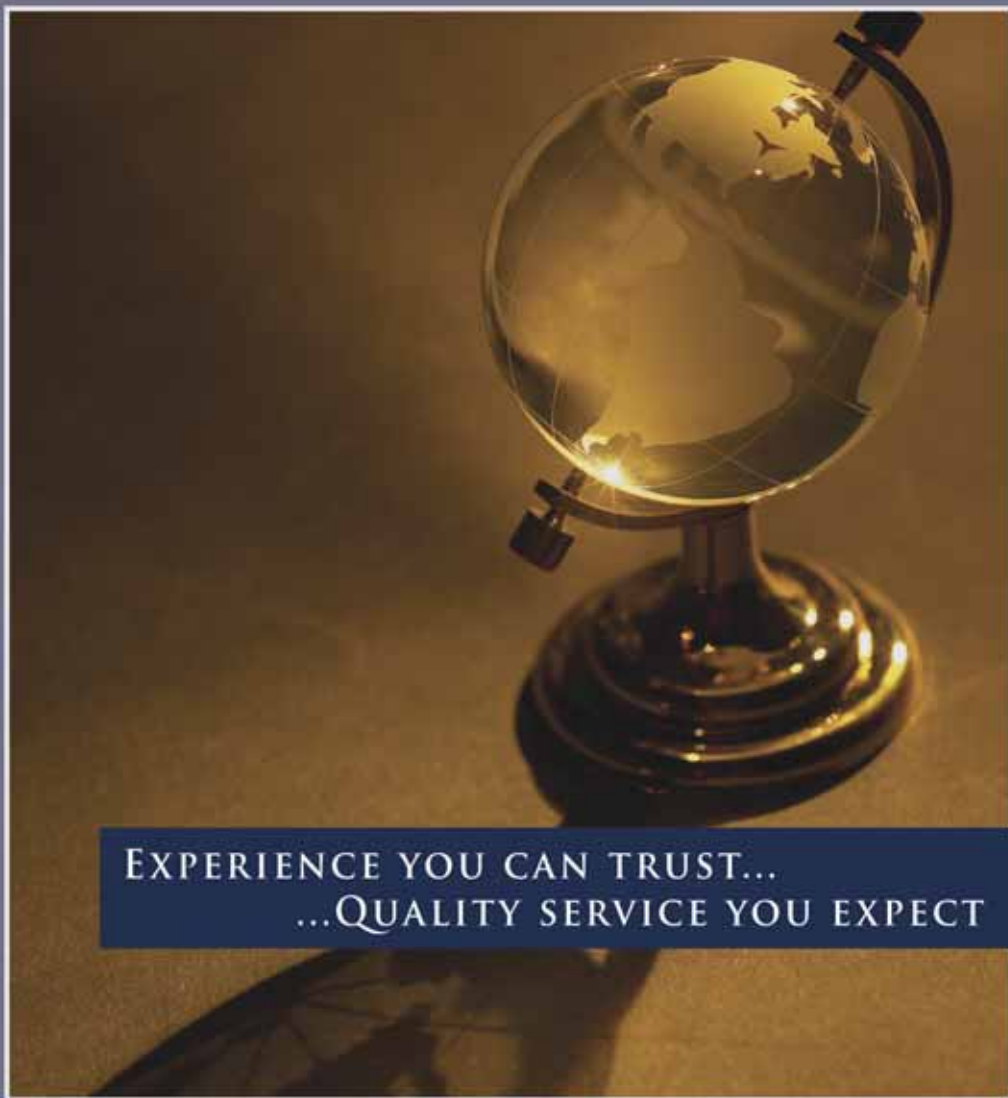
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- ▶ also considering launching a UK sovereign sukuk, a major tradable western sovereign Islamic bond which would be a major landmark in the development of Islamic finance. This would further strengthen the UK's position as the leading centre for Islamic finance outside the Islamic world and provide a positive impact on the development of the Islamic capital markets.

The square mile has been chosen as the financial centre to advise on a number of sukuk issuances – recently USD1 billion sukuk transaction for the Dubai government. Structuring of these larger transactions and successful closing of these deals has meant that more and more transactions are being structured and placed via the London market. Recently the first government sukuk to be listed on the London Stock exchange (LSE) was undertaken. Bahrain chose London to list its second Islamic bond as it sought to encourage more European and conventional investors to buy the paper. Investors the world over trust the LSE to deliver well-regulated, high quality markets. The fact that a deal is listed in London implies this credibility to the underlying paper given the long standing mature nature of the market itself. The \$350m Bahrain bond has meant that the total amount of sukuk listed on the LSE has increased to \$10.75bn. The underlying structure is an Ijara based deal where investors are paid rent from underlying leased assets, in this case a land parcel initially owned by the sovereign. Given the credit squeeze at present the pricing on this deal was higher than a previously placed Bahraini deal (the new five-year sukuk was priced at 75 basis points above US Libor).

However the pricing shift has not been as dramatic as expected in this particular case. The deal however indicates that the sukuk market has not come to a complete standstill given the global credit tightening. But this Bahraini sukuk issue in my opinion should be seen in light of the fact this is a sovereign issue and a relationship play for many investors with the Bahraini government. GCC Corporates on the other hand will find it difficult to issue sukuk for most of the remaining part of this year given the state of the capital markets. Syndicated transactions should however continue but will however see a marked widening in the spreads. The credit crisis has however shown that properly structured asset backed financing with recourse to proper tangible assets does have benefits, thus correctly structured Islamic transactions should by definition be an ideal asset class to look at for investors.

“... the City is maintaining its position as a centre of excellence outside of the Islamic world”

London is developing in terms of training and technical capability for the industry. The Islamic Finance Qualification offered by its Securities and Investment Institute is gaining recognition and the Chartered Institute of Management Accountants' Certificate in Islamic finance is the first offered by a professional chartered accountancy body. The technical capability within the London market has seen serious developments that have been reflected in terms of structuring and documentation of Islamic deals. Europe Arab Bank plc (EAB) has been developing its Islamic capability for the last twelve months. Given the role of EAB as the European representation of Arab Bank Group it was a natural asset class with which to be involved. EAB is supporting and developing trade and financial flows between Europe and MENA and as such the Islamic asset class fits Europe Arab Bank's role perfectly. EAB is able to manage the whole transaction process, originating, structuring and of course funding Islamic deals. These deals have ranged from leveraged buy outs, structured Islamic trade finance, Islamic project financing using Istisnaa and Ijara based structures, and all have been related to financing business between Europe and MENA.

Islamic finance is now a fixture in the London financial markets and *the City is maintaining its position as a centre of excellence outside of the Islamic world*. Europe Arab Bank plc will be working to ensure that this role for London continues and aims, with the support of businesses from within Europe, the MENA region and other Islamic countries to promote this vital form of financing on the world's financial stage at every opportunity.

Glossary

For those that have not really followed the development of Islamic finance here is a quick rough and ready guide to the products and the market:

- Islamic finance is based upon the Sharia'a (body of rulings derived from the Holy Qur'an and the traditions of the holy prophet from hadith)
- There are various principles which must be observed when structuring Sharia'a compliant finance:
 - The charging of any interest, or riba, is strictly prohibited.
 - Speculation or gambling is impermissible.
 - Certain products such as pork and alcohol and activities such as gambling are prohibited.
 - There can be no guarantee of a fixed return. The investor must share in some of the risk of the venture.
 - The existence of uncertainty, or gharar, in a contract is prohibited. (For example, it is prohibited for Party A to agree to sell a good to Party B contingent on Party A being able to buy the good from Party C as the sale is not certain to occur).
 - Money is merely a means of exchange and should not be treated as a commodity. Therefore the buying and selling of debt is prohibited.
 - It is prohibited to sell goods which one does not own, ie. no short selling
- In Islamic finance, it is acceptable for investors to make a financial return from:
 - owning physical assets (eg. commodities, real estate and manufactured goods)
 - leasing or renting physical assets
 - sharing of risk in a commercial venture
- Accordingly, in the Islamic market, financial structures generally involve the raising of finance based on a physical asset thus most are Asset Backed
- Time value of money: under Islamic finance, time value of money is not recognized, in which once the sale price is fixed for financing, even if the asset were to become 'non-performing', the institution cannot claim more than the prefixed sale price (i.e. no default interest)
- Means and end: profitability can be stated as a common 'end' for both Islamic and conventional financial institutions, the Islamic financial institutions carefully structure and adhere to procedures and process steps, or the 'means', to ensure that the profits earned are in line with the Sharia'a prescriptions
- The most widely used instruments in the Islamic market are:
 - Murabaha (cost-plus purchase and sale of commodities)
 - Ijara (lease of a physical asset)
 - Musharaka (sharing of risk in a commercial venture)
 - Istisna'a is a contract of exchange with deferred delivery, applied to specified made-to-order items used predominately in project finance for the construction and delivery of assets
 - Sukuk is an Islamic bond which is asset backed (various underlying structures have been used) ■

1. AAOIFI - Accounting and Auditing Organisation for Islamic Financial Institutions in Bahrain
2. Islamic Financial Services Board (IFSB) in Malaysia

3. Financial Services Authority

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Developing Carbon Capture and Storage in the European Union

Stavros Dimas is the European Commissioner for Environment

On 23 January 2008, as part of the Climate Action and Renewable Energy package, the European Commission made a legislative proposal to encourage the safe use of a promising family of new technologies known as carbon capture and storage. In this article, European Environment Commissioner Stavros Dimas explains the proposal and why the Commission has taken action now.

Climate change is the gravest long-term threat facing the world today. Global warming is accelerating and the consensus among leading scientists is that over the course of this century temperatures will reach dangerous levels, bringing an increased risk of irreversible and possibly catastrophic events, if the international community does not take urgent action to rein in emissions of carbon dioxide (CO₂) and other greenhouse gases.

The European Union has long been in the vanguard of international action to combat climate change but we cannot do it alone. This is a global problem requiring a global solution with the involvement of all. The number one priority is to get a new global climate agreement that is ambitious enough to achieve the deep reductions in worldwide greenhouse gas emissions in the medium and long run. Negotiations on this are under way and are due to be concluded by the end of 2009.

For the EU, the objective of the new agreement must be to limit global warming to no more than 2°C above the pre-industrial temperature because this is the 'tipping point' beyond which we would be in the danger zone, as world scientists told us in last year's report of the Intergovernmental Panel on Climate Change. To stay within this temperature ceiling, worldwide emissions of greenhouse gases will need to be cut by at least 50% of 1990 levels by mid-century. This is a huge challenge but the reduction is technologically feasible and economically affordable – particularly when compared with the astronomical economic costs that unabated climate change is projected to cause.

The current situation, however, is that global emissions are continuing to rise. In its 2007 World Energy Outlook, the International Energy Agency estimates that emissions from energy production will increase 55% by 2030. It also expects that 85% of the projected increase in energy demand will be met by fossil fuels and that the use of coal worldwide will increase by almost three quarters.

Why CCS now?

The message is clear: fossil fuels, particularly coal, will continue to provide much of the world's energy needs for decades to come, so we have to find ways to reduce their carbon emissions if we are to deal with global warming. This is true in Europe but even more so in the rest of the world and in particular in countries like China or India. Carbon capture and storage, or CCS, is one of the most promising new technologies in this area but it is still relatively untried. That is why on 23 January this year the European Commission proposed a legal framework to ensure the safety and environmental integrity of CCS projects and create the incentives necessary to bring CCS technologies into the mainstream.

Our goal is for CCS to be rolled out on a commercial basis by around 2020 so it can start contributing to emission reductions from then on. This requires pilot projects to be up and running in Europe by 2015.

Though CCS is expensive today, its future cost-effectiveness is a major argument in its favour. Studies show that reducing the EU's CO₂ emissions by 30% by 2030 would be 40% - or €60 billion - more expensive without the use of a technology such as carbon capture and storage. These savings can be extrapolated on a global scale. The global market for CCS is expected to be considerable so Europe has much to gain by getting a head start.

Addressing safety concerns

The elements of the CCS chain – capture, transport and storage – have all been tested, but rolling them out on a commercial scale remains a challenge.

The only major project to date carried out close to Europe is the Sleipner project where CO₂ stripped out of natural gas is injected in a saline aquifer under the North Sea. This project run by StatoilHydro and spurred on as a result of the Norwegian Government's tax on carbon has been running for over 10 years, storing some 1 million tonnes per year. The analysis and the selection of the site were carried out in a very transparent manner with the involvement of a range of scientific bodies in Europe. The site has been closely monitored over the years and evidence thus far indicates that the CO₂ is behaving as expected and that containment is robust.

There is no doubt that experience with CO₂ storage is limited and considering the risks involved it is only right that the public be kept informed. CCS can be likened to the process of storing natural gas in geological formations - a common practice across Europe - where some storage sites can be found in the vicinity of population centres. Due to the explosive nature of the gas these sites pose an obvious risk, but the industry's safety record is good. Storage sites have also proven robust in the face of moderate seismicity. A recent earthquake in the United Kingdom measuring 5.7 on the Richter scale had no effect on the integrity of the several natural gas storages in the vicinity of the epicentre.

Of course, the risks posed by CO₂ are different than those of natural gas. Carbon dioxide is not explosive and is heavier than air. It tends to cluster when released and if the atmospheric concentration exceeds around 10% it can be fatal. The intrinsic nature of the substance is such that any project cannot be risk-free.

Striking a balance

The reason for taking action is that the European Union will not be able to meet its climate change goals without carbon capture and storage. However, the reason for caution and for taking all necessary environmental and safety safeguards stems from the risks presented by concentrated CO₂.

The Commission's proposal for a directive on the geological storage of carbon dioxide¹ creates a framework that would allow CCS to exist while establishing a comprehensive set of environmental safeguards. In doing so the Commission considers that the risks of carbon capture and storage can be successfully managed – as demonstrated by the storage of natural gas – and that there is a pressing need for the technology. And as a result of the international convention on the protection of the marine environment (OSPAR) having been modified to allow the storage of carbon dioxide below the sea floor it is expected that a number of European CCS projects will go forward soon with the gains from the technology already eligible to offset carbon emissions in the emissions trading system.

Choosing the right carbon storage site is key to ensure the environmental security of a project. According to the Intergovernmental Panel on Climate Change a well-selected and managed site is likely to retain over 99% of the CO₂ injected into it for more than 1000 years.

In drawing up a set of criteria to ensure that in practice a site is well-selected, safe and well-managed the Commission took into account basic safety criteria, including the likeliness of leakages and the possible long-term requirements for maintaining a site. The first step in selecting a site is to construct a model and test the likely behaviour of the CO₂ once injected and identify any population centres or sensitive ecosystems that could be affected by the storage. Only if the



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- ▶ tests show that in practice and under the proposed conditions there is no significant risk of leakage or of damage to human health and property can the site can be used.

Once a site is being used for CO₂ storage a monitoring programme must be put in place to make sure that the CO₂ is in fact behaving as expected and that there are no leakages. The competent authority must inspect the site at least once a year.

If any leakage is identified a further set of measures kick in. The first step is for the company operating the site to take corrective measures to rectify the leakage. But the competent authority responsible for monitoring the project can require additional measures if it feels it is necessary, or it can decide to carry out these measures itself and recover the costs from the operator.

The second obligation in case of leakage is to surrender Emissions Trading System (ETS) allowances for any leaked emissions. The companies operating the site will have to monitor and quantify their emissions and surrender allowances to cover them. In this respect the monitoring of the ETS will be closely co-ordinated with monitoring of geological storage.

The third obligation is to rectify any local damage to the environment caused by CO₂ leakages according to existing environmental liability legislation².

Assuming responsibility for a site

To receive a permit companies wishing to operate a CCS site will need to set up and maintain some financial security measures to cover their liabilities. These measures must cover costs such as decommissioning and making the site safe, monitoring the site after its closure and ensuring that corrective measures and surrendering carbon allowances. Environmental liability responsibilities would not be covered by these security measures.

In the Commission's proposal the risks of maintaining a site are distributed between the operators and the state. The plan is that the state should assume responsibility for the site when evidence indicates that the stored CO₂ is completely contained for the indefinite future. But under the polluter pays principle companies operating CCS sites will have to bear the brunt of the risk. This approach puts CCS on the same footing as other emission reduction options where the sharing of liabilities between the state and industry is effectively a subsidy to CCS.

Competent authorities will have a crucial role to play in the implementation of some of the proposal's various elements in which they will have the final say. But to ensure harmonised implementation across the EU and the safety and integrity of projects in their early phase of operation, the proposal provides for a Commission review of the two key phases of a storage project, namely the initial permitting of the site and its transfer to the state.

Securing public confidence in the safety of the technology must be the number one priority. Should CCS be badly implemented or should something go wrong the reputation of the technology will be

tarnished and a major source of carbon emission reduction option lost. We must ensure that this does not happen.

If successful, capturing and storing emissions could quickly become a condition for entering and operating in the EU energy market, especially if carbon prices rise sharply. This is why the Commission's proposal on CCS has a number of provisions on accessing the Union's CO₂ transport and storage network. The principle used in the proposal is fair and open access where access is negotiated rather than regulated and where member states determine the conditions for access. The Commission will monitor the process to prevent uncompetitive practices from emerging.

With a robust management framework in place the main legislative obstacles to CCS must now be removed. The two main ones are to amend the Water Framework Directive³ to allow CO₂ storage in saline aquifers and to remove the restrictions on the capture, transport and storage of CO₂ from the European Union's waste legislation.

Providing the right incentives and conditions for development

The success of carbon capture and storage will depend on carbon prices and the cost of rolling out the technology. Widespread take up of the technology will only occur if the price per tonne of stored carbon is lower than the carbon price in the emissions trading system. But since the aim of the revised ETS is to reduce emissions of greenhouse gases by 20% the prices of carbon will most likely go up.

Bringing down the costs of the technology will require substantial investment. The commitment of the industry will be important to put to good use the funding provided by national authorities. The CCS technology will be a good candidate for receiving parts of the revenue national authorities will be earning from the auctioning of carbon allowances in the ETS. The Commission will look favourably on state aid geared towards the development of the carbon and capture technology.

At one point the Commission considered making CCS mandatory, but in the end opted to create a framework under which the technology could develop and be rolled out when most appropriate. This decision rested on the assumption that carbon capture

and storage could not be applied in the same way throughout Europe and that making CCS mandatory would disproportionately burden smaller member states. The Commission's proposal thus gives member states the option of going ahead with CCS and for companies to decide whether doing so is cost effective.

The way forward

The Commission believes that the time is ripe for moving forward with carbon capture and storage. Given the importance of tackling climate change the aim of the Commission's proposal was to present an option that could substantially reduce emissions of carbon dioxide being emitted into the atmosphere. Having studied the risks from capturing, transporting and storing carbon dioxide the Commission believes the risks are very low and can be managed. The European Parliament and Council must now come to an agreement before carbon capture and storage can move forward. ■

“... the time is ripe for moving forward with carbon capture and storage”

1. COM(2008)17
2. Directive 2004/35/EC

3. Directive 2000/60/EC

Carbon Sequestration Leadership Forum: An International Response to Climate Change

Barbara McKee is a Director of the Carbon Sequestration Leadership Forum Secretariat

Introduction

The world relies heavily on fossil fuels – coal, natural gas, and petroleum – as the mainstay of energy production and will continue to do so well into the 21st century. Clean and affordable energy is essential to global prosperity and security. However, concerns are growing over carbon dioxide (CO₂) emissions and their impact on global climate. A significant portion of the world's CO₂ emissions come from power plants and other large industrial operations. Without immediate action, annual global greenhouse gas emissions are projected to double by 2050. Carbon capture and storage (CCS) provides the means to enable fossil fuel use without further elevating atmospheric CO₂ concentrations from man-made emissions. At present CO₂ capture is very costly and energy intensive. Estimates of CCS costs using today's technologies are in the range of \$100 to \$300/ton of carbon emissions avoided, according to the US Department of Energy.

Reliable and cost-effective technologies for CO₂ capture, transport, and storage need to be developed and deployed. In addition, technologies to measure, monitor, and validate (MMV) the underground formations where CO₂ is stored need to be advanced to assure the public that CO₂ will remain safely locked away for a very long time.

Global concern necessitates a concerted global response

The Carbon Sequestration Leadership Forum (CSLF) acts as a vehicle for encouraging a concerted multinational response to climate change. It is an international climate change initiative focused on development of improved cost-effective technologies for the separation and capture of CO₂, its transport and long-term safe storage. As this carbon capture and storage (CCS) technology evolves from the demonstration stage to a commercially competitive level, the CSLF will help make it available internationally.

The CSLF is the first-ever ministerial-level forum on CCS and it underscores the new importance given to international cooperation. The developing and developed countries participating in the CSLF account for 75 percent of all man-made CO₂ emissions.

The CSLF was formed in 2003 and is currently comprised of 21 countries and the European Commission. Countries represented are

Australia, Brazil, Canada, China, Colombia, Denmark, France, Germany, Greece, India, Italy, Japan, Korea, Mexico, Netherlands, Norway, Russia, Saudi Arabia, South Africa, United Kingdom, and the United States. Membership is open to national governments that are significant producers or users of fossil fuel and that have a commitment to invest resources in research, development and demonstration activities in CCS technologies.

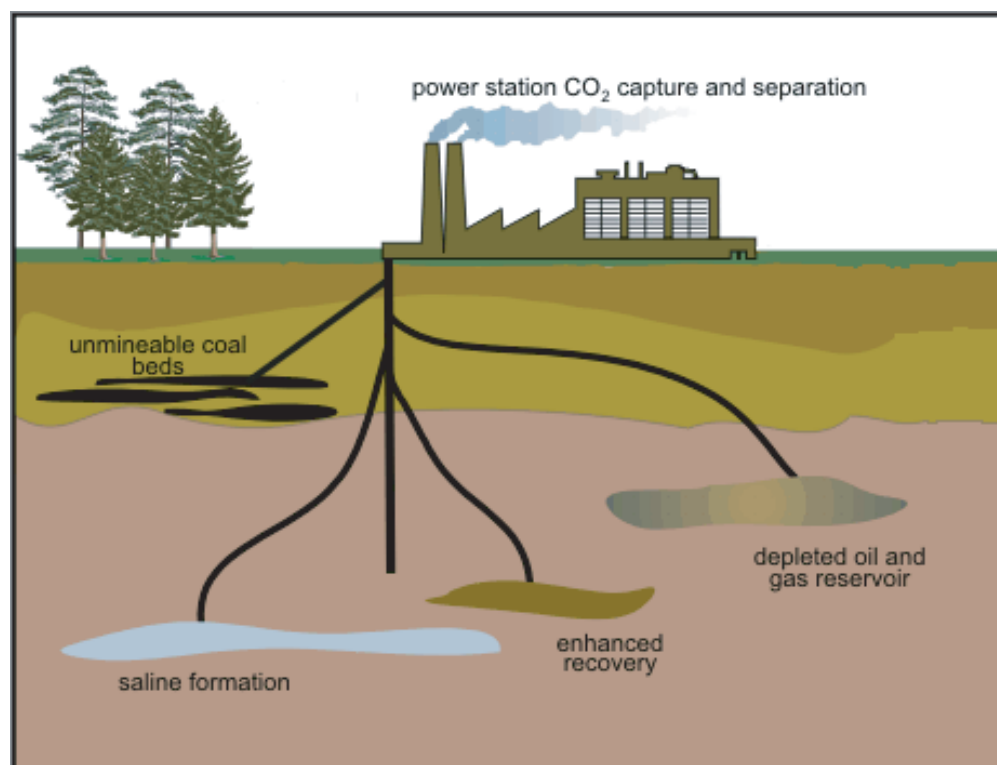
The CSLF seeks to address both the policy and technical barriers to CCS development and deployment. A Policy Group governs the overall framework and policies of the CSLF and a Technical Group reviews the progress of collaborative projects and makes recommendations to the Policy Group on any needed actions. Collaborative projects may be undertaken by the CSLF as authorized by the Policy Group at the recommendation of the Technical Group.

In July 2005, the G8 Summit endorsed CSLF in its Gleneagles Plan of Action on Climate Change, Clean Energy and Sustainable Development, and identified it as a medium of cooperation and collaboration with key developing countries in dealing with greenhouse gases. The G8 requested that the CSLF work with the International Energy Agency (IEA) to hold a workshop on near-term opportunities for CCS and to work together to study definitions, costs, and the scope for a capture ready plant and consider economic consequences. This work will be delivered at the next G8 meeting in Toyako, Japan, July 7–9, 2008.

Policy activities

The Policy Group is responsible for identifying key legal, regulatory, financial, public perception, institutional-related or other issues associated with the achievement of improved technological capacity; identifying potential issues relating to the treatment of intellectual property; establishing guidelines for the collaborations and reporting of results; assessing regularly the progress of collaborative projects and, following reports from the Technical Group, make recommendations on the direction of such projects; ensuring that CSLF activities complement ongoing international cooperation in this area; and considering approaches to address issues associated with these functions. A Policy Group task force on legal, regulatory and financial issues established five priority areas: intellectual property, national legal and regulatory frameworks, international environmental protection instruments, creating a level playing field for CCS, and public awareness. The task force has collaborated with the International Energy Agency (IEA) to hold two workshops on the legal aspects of storing CO₂. The first workshop was held in July 2004 and the second in October 2006. The task force released *Legal Aspects of Storing CO₂* in 2005 identifying the key issues for countries to consider when designing regulations for CO₂ capture and storage. This paper also sought to clarify how relevant international conventions might apply to CCS. The second workshop attracted around 130 participants (mostly legal) from government, industry, the research community and law firms around the world. The task force released a second paper on the legal aspects of storing CO₂ and this was handed over to the IEA for publication in 2007.

An important policy area with CSLF members is capacity building in emerging economies. The CSLF has initiated a task force whose purpose is to assist emerging economies to develop the



- ▶ knowledge, skills, expertise and institutions needed to deploy CCS technologies, develop training and educational resources that all CSLF members can utilize, build on lessons learned from CSLF-recognized projects, and collaborate with other international CCS initiatives.

This task force has held three workshops in the United States (May 2007), Brazil (October 2007), and Saudi Arabia (January 2008). The US workshop drew 700 people and was held in Pittsburgh to take advantage of the Sixth Annual Conference on Carbon Capture & Storage, which was taking place in Pittsburgh at the same time. The workshop covered an overview of issues and the need for carbon management, CO₂ storage capacity and assessment, risk management, carbon capture, measuring, monitoring, and verification, stakeholder involvement, legal/policy/regulation in CCS, and the economics and financing of CCS projects. Participants were given a tour of the US Department of Energy's National Energy Technology Laboratory CCS R&D facilities.

The workshop in Brazil drew 130 participants from universities, the oil and coal industry, and government from ten countries. This workshop focused on the technical aspects of CCS ranging from capture to storage, including monitoring, legal and regulatory aspects. The important outputs that came out of the workshop were the development of the "Student Body" concept – a tool for exchange of information for students.

The most recent workshop in Saudi Arabia drew a large audience around the themes of Commercial Aspects and Opportunities for Storage of CO₂ in Oil and Gas Reservoirs; Roadmaps and Their Importance; Issues that Impact CCS; and the Needs of Emerging Economy Countries.

Financial issues are a barrier to CCS deployment. A CSLF Policy Group task force on the subject is working to develop a detailed plan for financing CCS projects in emerging economy countries. The United States will develop a listing of existing funds, mechanisms, and forums to determine if any can be accessed or utilized for funding CCS activities in developing countries. The Asian Development Bank will provide a copy of a report by former World Bank Vice President Richard Stern that describes many opportunities. The United States will provide details of the recently proposed International Clean Energy Technology Fund, which is intended to fund projects.

Technical activities

The CSLF Technical Group is responsible for identifying key technical, economic, environmental and other issues related to the achievement of improved technological capacity; identifying potential areas of multilateral collaboration on carbon capture, transport and storage technologies; fostering collaborative research, development, and demonstration (RD&D) projects reflecting members' priorities; assessing regularly the progress of collaborative projects and make recommendations to the Policy Group on the direction of such projects; establishing and regularly assessing an inventory of the potential areas of needed research; facilitating technical collaboration with all sectors of the international research community, academia, industry, government and non-governmental organizations; and considering approaches to address issues associated with these functions.

The CSLF established a Technical Group task force for review and identification of standards for CO₂ storage capacity estimation. The objective of this task force was to develop and disseminate a clear set of definitions and methodologies that will allow: consistent assessments of CO₂ storage capacity in geological media at various levels based on jurisdiction and/or geological domains that would provide decision makers in government and industry with the information needed for making the right decisions regarding CCS implementation; comparison of CO₂ storage capacity at various levels (country, basin, regional); and understanding of the basis for estimation and critical review of results.

Participants in this task force felt that previous attempts to assess CO₂

storage capacity used a wide variety of approaches and methodologies that considered various trapping mechanisms, and data sets of variable size and quality, resulting in widely varying estimates of inconsistent quality and reliability. In September 2004, CSLF established a Task Force for Review and Development of Standard Methodology for Storage Capacity Estimation. In September 2005 this task force presented the results of Phase 1 in a discussion paper in which previous estimates were critically analyzed and gaps in knowledge and/or methodology were identified. In March 2007, the task force presented the Phase 2 report covering definitions, concepts and methodologies to be used in estimating CO₂ storage capacity that should serve as a basis for collecting the necessary data and properly estimating the CO₂ storage capacity in geological media.

This task force is continuing its work via a third phase. This phase entails harmonization of methodologies developed by the CSLF Task Force with methodologies developed by other groups, such as the US Department of Energy's Regional Partnerships Geologic Subgroup; compilation of representative case studies of CO₂ storage capacity estimation at various scales in various geological settings and different countries; and provision of support to the CSLF Capacity Building task force on knowledge transfer to CSLF-member developing countries.

The CSLF also established the Technical Group task force to examine risk assessment standards and procedures to identify potential risks from CO₂ CCS activities and examine the risk assessment standards and procedures that could be used to place these risks in context based on their likelihood to occur and their possible consequences. The focus will be on risks that are unique to CCS: the risks associated with the injection and long-term storage of CO₂, a reactive, mobile, and buoyant fluid, in geologic reservoirs.

Specifically, this task force will focus on risks associated with CO₂ injection (including fracturing, fault re-activation, induced seismicity); and risk associated with any CO₂ migration from the storage reservoir. Such risks include the health, safety, and environmental risks of long-term CO₂ storage the potential impact on natural resources such as groundwater or other resources and fugitive emissions into the atmosphere. This task force is preparing a draft of a Phase I report that could be released in 2008.

Projects move technologies forward

The CSLF has recognized 19 collaborative projects, three of which have now been completed. These projects cover a range of technologies and serve to demonstrate the breadth and richness of ongoing CCS activities around the world. The CSLF project recognition process is intended to encourage activity in areas where technology gaps have been identified. To that end, a Technology Roadmap and a Gaps Analysis have been developed. Together, these are intended to facilitate the pathway toward development to the commercial stage of CO₂ capture, transport and storage technologies over the next decade.

Conclusion

The CSLF was established to help develop and demonstrate a range of technologies for CCS and has already had several notable achievements. The CSLF has developed a common strategic plan and technology roadmap for all the major players to work together to develop and deploy CCS. In one important activity under those plans, the CSLF assembled leading experts from around the world who developed common methods to estimate CO₂ storage capacity. Other CSLF experts identified needs for measurement, monitoring and verification and technological gaps that need to be met. The CSLF also works to ensure that the technologies and institutional practices developed for CCS provide for storage which is properly managed, safe and permanent. To further that end, the CSLF fostered information exchange among its members to accelerate the development of legal and regulatory frameworks for CCS. ■

Additional information about the CSLF and its recognized projects can be found online at www.csforum.org.

Carbon Capture and Storage - Essential to Contain World Climate Change

Jeff Chapman is the CEO of the Carbon Capture and Storage Association (CCSA)

Carbon Capture and Storage (CCS, sometimes known as carbon capture and sequestration) is increasingly seen as a major part of the solution to tackling world climate change. Sir Nicholas Stern in his 2006 report on the *Economics of Climate Change* referred to CCS as “essential to maintaining the role of coal in providing secure and reliable energy for many economies”. Andris Piebalgs, the EU Energy Commissioner, has said “climate change cannot be combated without CCS”. There is no doubt that all possible means of combating climate change will be needed if we are to achieve the target of limiting atmospheric CO₂ levels to 550 parts per million by 2050. This will include nuclear power, renewable energy and energy efficiency – and since the world is so dependent upon fossil fuel resources, it also has to include CCS.

What is CCS?

In its simplest form CCS involves extracting the CO₂ from power stations and industrial processes then compression, transportation to the point of storage, and injecting the CO₂ into deep underground geological structures.

The most straight forward method of capturing CO₂ is post combustion capture, which involves scrubbing the flue gas from a power station chimney, from the exhaust of cement plants or steel works – usually with an amine solution (see figure 1). The solution is then taken away and boiled to release the CO₂. The resulting gas contains CO₂ and water vapour and is dried and compressed ready for transportation – normally by pipeline. This process is attractive due to its applicability for retrofitting onto existing plant.

An alternative to post combustion capture is provided by oxyfuel combustion (see figure 1). Instead of separating CO₂ from the exhaust products, this method separates the oxygen from the air and thereby burns fuel in pure oxygen, which results in a near pure stream of CO₂ in the exhaust. This process is attractive as it has the potential to result in improvements in combustion efficiency.

Incorporating CCS into the design concept of a new power plant forces a rethink of the optimization of the entire power plant design, and this has led to the development of the third method of CO₂ capture – pre combustion capture (See figure 1). Integrated coal Gasification Combined Cycle (IGCC) plant has until now not been widely developed because it has been considered an expensive method of generating electricity. With the addition of CCS, IGCC becomes a more attractive technology because carbon capture can be

integrated into the process prior to combustion. The process of pre combustion capture involves heating coal or another fossil fuel which produces a synthetic gas containing hydrogen and carbon monoxide that can be further refined by reaction with water vapour to produce a mixture of hydrogen and carbon dioxide. The hydrogen is then used as a clean fuel to generate electricity in a gas turbine and the CO₂ gas is cleaned and dried before transportation. Again, pipeline transportation would be the preferred route due to the sheer volume of CO₂ – typically measured in millions of tonnes per annum. CO₂ in small quantities is already transported by road tanker and ship for industrial uses.

Once the CO₂ reaches the point of storage, it is injected deep underground into suitable geological strata. The structures best suited for CO₂ storage are depleted gas wells, depleted oil wells and saline formations (see figure 2). Depleted oil and gas wells have been known to store methane and CO₂ over very long geological periods and can therefore be regarded as extremely secure. These structures have a high level of geological knowledge resulting from years of effort into exploration and production of the hydrocarbon resource, and could contain the entire UK’s CO₂ emissions for at least several decades. Less well explored but considerably more abundant are saline formations; these structures are similar to oil and gas wells in that they contain saline water in the interstices of porous rock. Saline formations can be used for storage of CO₂ where these are known to contain an impervious layer or cap rock over the top of the formation.

Storage of CO₂ can also yield added benefit where the CO₂ is used as a fluid for enhanced recovery of other products. Under the temperature and pressure conditions of CO₂ at that depth the gas becomes a supercritical fluid. Supercritical CO₂ has extremely voracious solvent properties and therefore tends to dissolve crude oil so that it can move more efficiently through the pores of the rock to the well head where the CO₂ is then recovered and re-injected. This process of Enhanced Oil Recovery (EOR) has been practised for over 30 years in Texas and has to date resulted in the extraction of approximately a third more oil.

Where CCS is currently practised

The EOR operations in West Texas have given the oil and gas companies considerable experience with storing CO₂, although in this case the CO₂ comes from naturally occurring underground reservoirs rather than industrial process separation. In addition to this there are

currently three projects in operation in the world that are receiving a considerable amount of international attention and scrutiny by geological experts. The first is the Statoil Sleipner project in the Norwegian sector of the North Sea where approximately 1M tonnes of CO₂ has been stored per annum over the last ten years. The second project is led by BP in Algeria and also stores about 1M tonnes per annum of CO₂ - the source of CO₂ in both cases is natural gas, which contains a proportion of CO₂ that has to be separated prior to its commercial use. The third of these projects separates CO₂ from a solid fuel gasification plant in North Dakota, and the CO₂ is then transported by pipeline about 300 miles north into Saskatchewan where it is injected into oil wells for EOR. This project has enjoyed such success that a new power

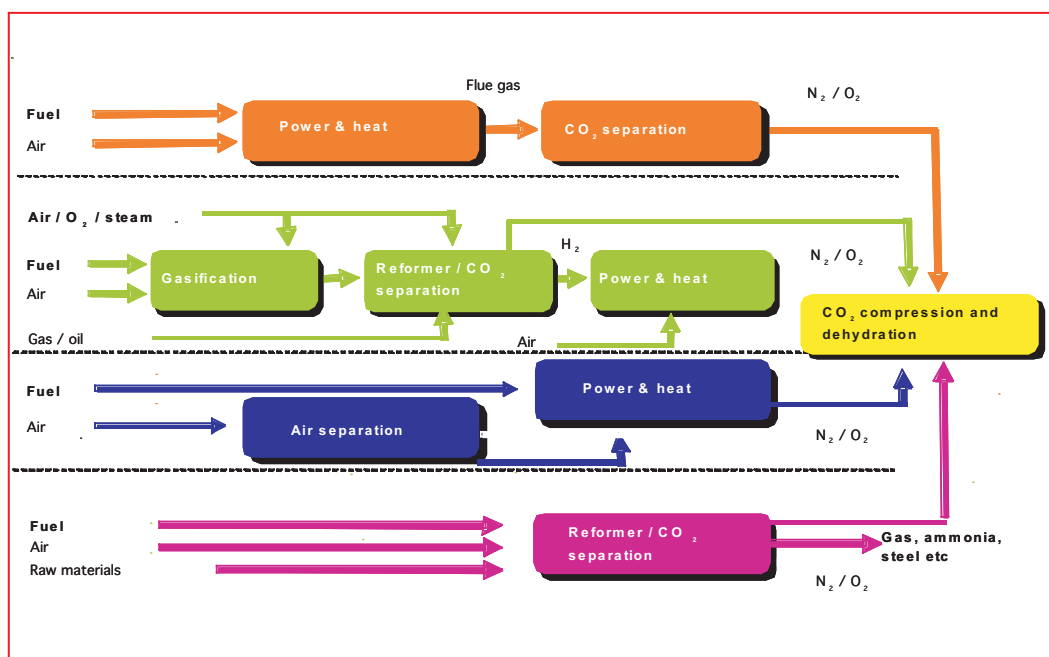


Figure 1

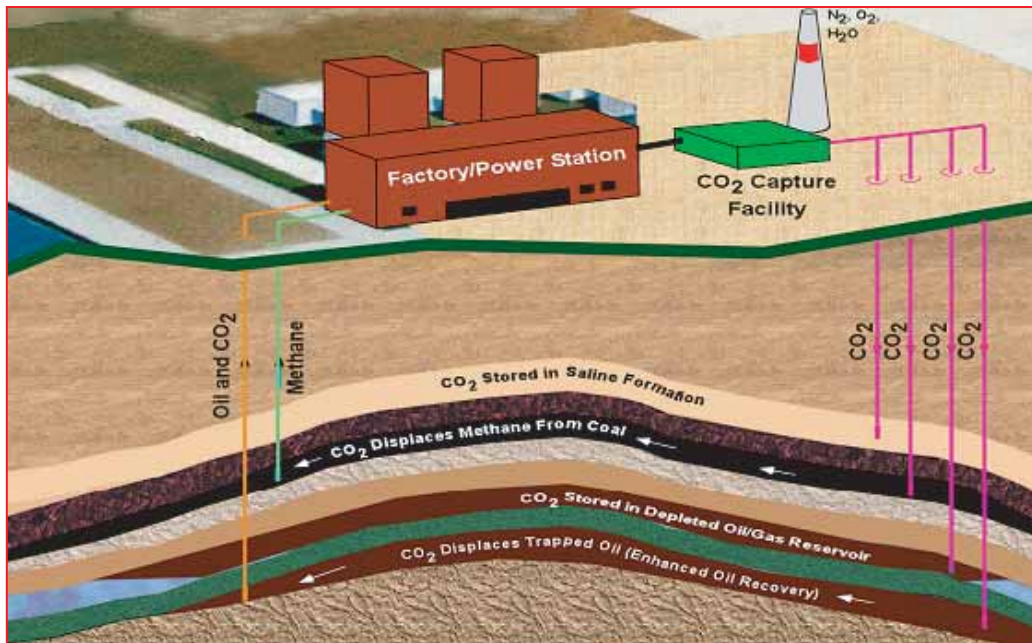


Figure 2

- ▶ plant is being developed alongside the gasification plant to supply additional quantities of CO₂.

Why is CCS needed?

Put simply, the world is addicted to the use of fossil fuels and this situation will continue for a considerable time to come. As long as there are abundant global supplies of fossil fuels mankind will continue to extract its energy value. Global figures of fossil fuel supplies show estimates of more than four decades of known oil reserves, more than six decades of gas reserves and fifteen decades of coal reserves. Whilst governments negotiate on climate change many developing countries continue to expand their economies through increased use of fossil fuels. For example China's economic expansion and increases in manufacturing output is generally based on the use of coal with consequent increases in CO₂ emissions. Last year alone China built more coal fired power plant than the entire UK power generation capacity.

Non-conventional fuels

In a carbon and resource constrained world CCS is the key to exploiting marginal reserves of fossil fuels. The Sleipner and In Salah projects mentioned above separate CO₂ from natural gas before commercial use, and there are considerably more known natural gas resources in the world that remain unexploited because of their high CO₂ content. The production of natural gas allied with CCS will become increasingly more economic with the global growth in LNG infrastructure.

The Athabasca oil sands in Canada provide the country with second largest reserves of oil after Saudi Arabia. As the price of oil has increased, the development of marginal oil reserves has become more attractive leading to massive exploitation of the oil sands. The processing needed to convert the mixture of bitumen and sand to synthetic crude oil costs about a third of the energy value. The result is a massive increase in CO₂ emissions which is unsustainable in the long term. CCS will therefore become essential in the development of this resource.

Conventional supplies of fossil fuels are beginning to peak leading to a great deal of effort in the development of Coal to Liquids (CTL). This process begins with the gasification of coal as above and produces a very clean synthetic fuel with less pollutants than conventional distillates. The by-product of CTL is a very high concentration CO₂, particularly suited to CCS.

EOR has been referred to above; this causes CO₂ to flush out oil from partly exhausted reservoirs. Likewise, Enhanced Gas Recovery (EGR), the concept of using CO₂ to flush out gas reservoirs, is worthy of consideration although it is unlikely to increase yields to the same extent as EOR and to date has not been commercially practised. Enhanced Coal Bed Methane (ECBM) is another prospect and relies on the

greater absorptive potential of coal for CO₂ compared with methane. CO₂ injected into coal seams literally displaces methane which is absorbed onto the coal surface. However, it is unlikely that considerable quantities of CO₂ will ever be stored in this way.

CCS will generally be needed to ensure sustainability of coal production, but in particular there are significant coal resources currently not exploited because of cost or purely physical constraints. The process of underground gasification of coal has been developed by injecting controlled quantities of oxygen into underground strata. This is chemically identical to the gasification process above and will certainly depend on CO₂ capture and storage for the process to gain public acceptance.

The hydrogen economy

A great deal of discussion takes place regarding the use of hydrogen as fuel for vehicles and for heating purposes, as the combustion products contain purely water. Much effort is spent on the development of hydrogen engines and fuel cells without a corresponding effort dedicated to the source of hydrogen. Many perceive that the ideal source of hydrogen originates from electricity generated by renewable sources. In fact using electricity to produce hydrogen that is later converted back to electricity is an extremely inefficient process as well as very expensive. The likelihood is that hydrogen will be produced by using fossil fuels in exactly the same way as the gasification process referred to above – and this will fuel the hydrogen economy. One of the main constraints of this hydrogen economy is the availability of fuel and the creation of a distribution infrastructure. The development of IGCC or pre combustion capture power plants provide commercial quantities of hydrogen and will begin to establish a network for distributing hydrogen fuel. In the future new business models will likely emerge in which fossil fuels are gasified to produce hydrogen which is sold over the fence to power generators, vehicle fuel distributors as well as commercial and domestic gas supply companies.

Infrastructure

An entirely new pipeline infrastructure will be required to transport the significant amount of CO₂ that will be produced from these projects; for example a 1GW coal fired power station produces 5M tonnes of CO₂ per annum, and the largest power station in the UK produces over 20M tonnes of CO₂ per annum. In future, CO₂ will be collected from a number of point sources and piped to the point of storage with potential distribution to a range of injection sites. A project is being undertaken in the UK to investigate the potential for a cluster of carbon capture projects in the Humber area which would combine in excess of 60M tonnes per annum of CO₂ for storage. This is potentially the largest cluster in the UK and will provide a CO₂ transport network to injection points in depleted gas wells and saline formations in the southern North Sea. A local or regional infrastructure based on large point sources of CO₂ will also be able to incorporate smaller point sources including other industrial processes. This model is likely to be repeated in different regions throughout the world.

Is stored CO₂ secure?

The first point to make is that at present, there is 100% leakage of CO₂ to the atmosphere. The aim of CO₂ geological storage is total and permanent removal. Many areas in the world are in the fortunate position that an abundance of available storage formations exist and only the highest integrity structures need to be selected. There are several different geological features that ensure that the CO₂ will remain underground - not the least of which is the sheer depth of injection. The process of stratigraphic trapping contains CO₂ under a dome of impermeable cap rock. In addition, structural trapping can take place where impermeable rocks that have been shifted by a fault, ensure the CO₂ is held in place. Residual trapping ▶▶

Energy Market Research

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▶ is a process by which CO₂ is trapped in the tiny pores of the rock – this is caused by the capillary pressure. Solubility trapping occurs in saline formations as CO₂ is soluble in water. Finally, mineral trapping occurs due to the ability of CO₂ to react chemically with certain types of rock. In terms of leakage, the most likely source would be the failure of a well bore. Such an event would result in normal remediation practice for oil and gas companies. In general, CO₂ reservoirs will be carefully monitored using well established techniques that have been developed for the exploration and production of oil and gas.

How safe is CCS?

It is common knowledge that CO₂ is a normal metabolite of the human body and as such is not a poison. However it is an asphyxiant and great care must be taken when handling large quantities. CO₂ capture and handling is a well established process in industry and health and safety procedures exist to regulate this process. The difference with CCS is that extremely large quantities of CO₂ will be captured and transported over long distances. However, industry has an understanding of this; the Texas example of using CO₂ for EOR and the associated large pipeline infrastructure has provided considerable industrial experience. The industry is working with the regulator towards robust common standards for design and operation.

What are the plans for CCS?

If the world is serious about its climate change targets then a significant number of CCS plants will need to be installed in the very near future. The International Energy Agency has indicated that over 600 large scale CCS plants will be required by 2030. Given that only three operational plants in the world exist at present, a huge effort is needed to start this programme.

In the UK there are at least four pre combustion capture projects and at least six post combustion capture projects currently under development. The UK government is providing funding for a demonstration plant of 300MW in size and this should be operational by 2014. However, a much larger effort will be needed to incorporate CCS into all the plants just mentioned.

There is an aspiration in Europe to install up to 12 full scale CCS demonstration plants by 2015 – at the moment it is difficult to see where the investment will come from. However there is a strong recognition by the European Commission and by the UK Government for the need to deliver CCS plants, and hopefully this impasse will be resolved as soon as possible.

At an international level, Canada is in a position where at present it is at least 270M tonnes of CO₂ per annum ahead of its Kyoto target and it is widely accepted that Canada will be unable to achieve its target. Nevertheless there is very compelling pressure to curb CO₂ emissions and since a large proportion of the emissions stem from industrial processes, CCS is becoming an essential option. Both the Canadian government and the provincial government of Alberta are urgently addressing the need for CCS.

The USA position on climate change is well known as is the desire of the US government to reduce its dependency on imported oil and become more energy self-sufficient. With the large coal reserves in the US, building coal fired power plant into the future is a very compelling argument as well as the use of coal to liquid. CCS is seen as an extremely important way for the US to overcome its climate critics whilst retaining a certain life style and energy security. This has led to a plethora of proposals both at federal and state levels for supporting CCS projects.

Australia has an economy that is highly dependent upon energy. Not only does it use and export very large volumes of coal, it also exports energy intensive products such as aluminium and copper. There are a number of CCS projects under development in Australia against a policy background of developing an emissions trading framework and regulations for CCS.

In addition, the Middle East is likely to become a hot-bed of CCS development. The large oil producing countries are well aware of the importance of CCS and the potential of EOR to ensure their continued business and future economic prosperity. A project is under development in Abu Dhabi in which natural gas will be decarbonised to provide hydrogen fuel for power and CO₂ for EOR. Repetition of

this model can be expected in other Emirates, Saudi Arabia and Qatar.

In China the burgeoning use of coal requires CCS plants in operation as soon as possible. The UK government and European Commission are supporting CCS development work in China and a local project termed Greengem is in progress – supported by a consortium of industrial partners. However, more effort is needed to establish a framework that not only applies CCS to new coal fired plant in China but also makes it profitable to retrofit CCS to existing plant. Another driving force in China is the gradual privatisation of companies, which now take corporate social responsibility much more seriously and the energy companies accept that CCS will become part of their future sustainability.

Finally, although India currently seems to lag behind China in terms of CCS awareness, the predominance of very large industrial corporations means that corporate social responsibility will also be a driving force in this country.

So what is holding up CCS investment?

At present, there is no barrier to commercial investment in CCS other than policy. An abundance of storage space exists, the majority located relatively close to the sources of CO₂. The technology is available although more work is needed to optimise existing technologies and develop new technologies. Technological improvements will include maximising the CO₂ recovery rate and reducing capital as well as operating costs; at present there is a considerable “first of a kind” cost penalty. The level of interest from industry is high, and there is no shortage of finance for good projects, however project finance is dependent upon a long term reliable and adequate return and new policy needs to be developed in this area.

Policy for CCS falls into two categories; firstly CCS investment cannot take place in a regulatory vacuum, some existing policies militate against CCS and it has therefore been necessary to amend existing regulations such as the global London and OSPAR conventions on dumping at sea. In every jurisdiction there needs to be an established and robust regulatory regime to ensure public confidence in the storage of CO₂.

In Europe the UK has taken a leading role in developing a regulatory regime for CCS. The UK Energy Bill paves the way for the detailed regulation of CCS. In Europe, the draft CCS Directive owes a great deal to the lead taken by the UK regulatory work. The draft EU ETS Directive for phase 3 will formally recognise CCS and regulations on state aid have been relaxed to enable the CCS demonstration programme.

The second and most difficult component of policy is the provision of short and long term incentives to undertake CCS projects. All low-carbon energy technologies need some form of public incentive. Renewable energy technologies are generally financed by the electricity consumer through feed-in tariffs or in the UK, by the Renewable Obligation. In this case, the electricity consumer can clearly see a benefit from this financing – in terms of funding spent on for example, wind farms.

CCS is a very competitive method of eliminating CO₂ emissions. However, due to the sheer size of the plant the projects are extremely high in capital cost. The additional cost of a CCS plant on a new power station can be over half a billion dollars, and for this reason finance ministers will have difficulty in allocating funding from their budgets.

So how is funding to be found? In Europe there is a more than adequate supply of funds to be accumulated indirectly from electricity consumers through the auctioning of EU ETS allowances. From 2013 onwards the entire power industry will be required to buy all of its allowances to emit CO₂ in effect from member state government auctions. This will yield a total tax across all member states of approximately €50BN per annum - this level of funding is perfectly adequate to finance the 12 CCS demonstration projects across Europe and considerably more as well. The electricity consumer would thereby be reassured that their money was used to reduce CO₂ emissions. No finance minister likes the use of the word ▶▶

- ▶ hypothecation but that fact is that finance ministers will find it difficult to argue that they do not have the revenue to apply to these projects.

Elsewhere in the world such as USA and Australia, as emissions trading schemes emerge, then the opportunity will exist to return funds in those markets as well.

In developing countries, the only hope of financing CCS at present is the Clean Development Mechanism (CDM). CCS is currently not recognised under the CDM and its inclusion has been resisted by certain countries in UNFCCC negotiations. CCS is especially needed in the large developing countries such as India and China and it is therefore essential that CCS is incorporated into the CDM and given

the very highest priority in negotiations on the post 2012 framework to ensure that an ongoing mechanism exists to finance CCS in developing countries.

CCS – the business future

The development of CCS will lead to the creation of a massive market for capital plant estimated at many billions. Furthermore, there will be enormous potential for new business streams in for example; CO₂ storage, pipeline operations, hydrogen supply and air separation for oxygen supply, not to mention the wide range of services that will be needed to support the development of this market. Clearly, the prize will be very large indeed for companies and for countries that can convert early action into future business. ■

Trade Can Save the Climate

Peter M Robinson is President of the United States Council for International Business

A part from their seemingly mind-numbing complexity, the UN climate negotiations that took place in Bali in December, where nations began to map out a successor agreement to the Kyoto Protocol, would seem to have little in common with the Doha round of global trade talks. Indeed, they are rarely mentioned in the same breath.

This is disappointing. Freer trade and progress on climate change are both essential to sustainable development. International trade is a proven path to economic growth and technological advancement: as countries trade more, they grow richer and have more resources to devote to environmental protection. So both rich and poor countries have a clear stake in finding workable, mutually reinforcing resolutions to the Doha and Bali talks.

Free trade and environmental protection go hand in hand

What's more, despite repeated predictions of imminent collapse, the Doha round is actually showing some signs of progress. Reaching a comprehensive agreement that lowers barriers to trade in both goods and services could positively influence the course of global climate policy. If both the Doha and Bali negotiations are successful, the result would be greater than the sum of the parts.

Conversely, if trade and climate are set against each other, the results would hamper economic growth, fuel protectionism and complicate the already difficult task of coming to a global consensus

resisted binding curbs on emissions, feeling this would constrain growth. But there already exist many cleaner-energy technologies and practices that could permit these countries to continue to pursue growth while contributing to a global reduction in emissions.

Many see a global price for carbon, set through an "artificial" market along the lines of European-style emissions trading, as the main catalyst for climate-friendly investment and technology. But far more important is freeing up the power of traditional markets to deliver green technologies where they are needed most.

A recent World Bank report found that removing tariffs and non-tariff barriers in 18 of the high-emitting developing countries for four basic clean energy technologies (wind, solar, clean coal and efficient lighting) could lower the costs of these technologies by some 13 percent, which could help reduce emissions significantly. What's more, it is clear that these reductions could be further augmented through the application of better management practices and technical know-how, both of which tend to follow in trade's wake.

A huge market for firms

Making sure climate and trade regimes are harmonious and mutually reinforcing would also open up vast opportunities for many multinational firms. The world market for environmental technologies is valued at \$800 billion per year and growing. GE, United Technologies and many others are innovating, and they are

"Success in the Doha and Bali negotiations would be greater than the sum of the parts"

on protecting the climate. Even now, too many parties seem to want to use trade as a "hammer" to force countries to follow a specific path on reducing emissions of greenhouse gases. We must resist this temptation.

Nearly everyone involved in the climate talks agrees that innovative technologies are indispensable in both mitigating and adapting to climate change. China's greenhouse gas emissions are expected to surpass those of the United States this year. It's clear that the commercialization and dissemination of environmentally friendly technologies in rapidly developing countries like China and India is especially critical.

Needed: a technological pipeline

Most poorer nations understandably view the pursuit of economic growth as their right, and it is unlikely that they will agree to anything that places serious obstacles in their way. So far, they have

looking to market and utilize their climate-friendly technologies in India, China, Brazil and other rapidly growing markets.

So more open trade could be what bridges the rich-poor divide on global warming and brings the world together, generating economic prosperity while protecting the climate.

To be politically viable, climate solutions must speak to real-world needs, including economic growth. They must be seen to deliver benefits today to people in both rich and poor countries. And they need to be in line with other political and market realities.

Among these realities is the desperate need to roll back tariffs on environmental goods and services, and halting calls for protectionist policies in the name of climate change. Completing the Doha round would set us on this path. ■

A Review of the EU ETS: A Step Forward With Some Major Question Marks

Henry Derwent is President and CEO of the International Emissions Trading Association

The European Commission's proposals for changes to the EU emissions trading system were published in January and are intended to provide the framework for operations from 2013 onwards. Now they must be debated and no doubt amended by the EU Council of Ministers and by the European Parliament, with the final text set to be agreed at the end 2008 at the earliest.

What's in the proposal?

Several major changes are proposed to the existing system.

As from 2013, the present 27 national caps on emission allowances will be replaced by a single one that is EU-wide. This approach should eliminate many of the complexities and competitive distortions generated by the previous system which allowed each member state to favour its own industries. Compliance periods have been lengthened to 8 years (eg. 2013 to 2020), and the annual cap will decrease according to a linear factor which is set until 2028.

The system has been extended to cover new sectors, including aluminium and part of the chemical industry, and two new gases, nitrous oxide and perfluorocarbons. At the same time the Commission proposes that thousands of small installations that collectively contribute only one per cent of emissions can be excluded, provided that equivalent measures to reduce emissions are introduced by the countries in which they are located.

Arrangements for the distribution of emission permits (EU allowances) will be changed radically. Auctioning will be greatly increased. The power sector will receive no free allowances from 2013, and while energy-intensive sectors will initially receive 80% free allowances these will decrease to zero by 2020. The remaining free allocations will be distributed on the basis of EU-wide benchmarks rather than in accordance with national rules.

The increase in auctioning has been proposed for two main reasons. First is the need to adhere to a perceived fairer and simpler system that better enshrines the "polluter pays principle". Second is the determination to curb windfall profits for those sectors, such as the power industry, that can pass through the costs of allowances to their final products to reap undue windfall profits.

In response to the fears of energy-intensive sectors that the price of carbon will lead them to move out of the EU if other major economies do not sign up to comparable obligations, the Commission proposes that up to 100% free allowances will be distributed when proof of the risk of delocalization is available. A system requiring importers of certain commodities to purchase allowances may also be set up.

In an effort to appease the concerns of poor but fast-developing member states, part of the rights to auction allowances will be redistributed to them from wealthier member states to help them fight against and adapt to the effects of climate change. This principle is questionable as it distorts the objectives of the ETS, namely to reduce emissions in a cost-efficient manner, not to serve as a tool for solidarity and growth purposes.

The use of the substantial revenues that will be derived from auctioning is already controversial. The current text proposes that revenues be earmarked by member states to develop technologies such as renewable energies and carbon capture and storage, adapt to climate change and cover the administrative costs of the system. But the member states themselves have already signalled their resistance to this idea, arguing against the principle that the EU should be able to impose restrictions upon the use of their revenues.

Last but not least, access to international offsets, such as the Kyoto Protocol flexible mechanisms, has been severely restricted in the proposal. Two different scenarios are envisaged. If no post 2012 international agreement is reached operators will only be able to use

the unspent amounts that were granted for Phase II. If an agreement is reached then up to half of the increased EU cap can be covered through offsets.

What is the final verdict?

There is much to welcome in the Commission's proposals but there is also much that needs to be clarified and improved given that the legislation will have major repercussions on the investment and management strategies of all operators. At least three issues have been picked up by operators.

1. Access to credits from Kyoto Protocol flexible mechanisms (CDM and JI)
2. Allocation principle and auctioning methodologies
3. Relation with Renewable Energies (RES) and Energy Efficiency targets

1) Access to credits from Kyoto Protocol flexible mechanisms (CDM and JI)

The European Commission's proposal envisages two distinct scenarios in terms of access to credits from CDM and JI projects.

- a. In the event that no post 2012 international agreement is reached, installations will only be entitled to use the amount of credits assigned to through national allocation plans for Phase II, ie. about 1.4 billion tonnes.

Only projects approved by all member states and set up between 2008 and 2012 will be accepted. New projects will be accepted only if they are set up in Least Developed Countries (LDCs) or through future bilateral or multilateral agreements between the EU and third countries.

- b. In the event that a post 2012 agreement is reached, access to CDM-JI credits will be increased up to half of the additional reduction effort to which the EU will sign up under the agreement.

Increased access under the terms of the new agreement would amount to up to 700 million tonnes in the event that the EU signed up to a 30% reduction target below 1990 levels.

The key point about abatement of green house gas emissions is that it does not matter where they take place. Given the daunting challenge of mitigating the effects of climate change, abatement should take place wherever it is most cost-effective, hence not necessarily, or not exclusively, in the EU.

Economic theory would suggest that abatement should take place wherever it is most cost-effective, regardless of whether that happens at domestic or at international level. IETA maintains that this principle is correct from the purely economic and environmental point of view. In the most efficient countries, such as Japan, where the average cost of abatement reaches 200 USD/tonne, this approach is particularly relevant. IETA however recognises that a pure transfer of wealth and technologies towards developing countries would be politically unacceptable. Abatement of green-house-gas emissions is also being used as a tool to promote domestic investment in low-carbon technologies, security of supply and employment and reap ancillary environmental benefits such as improved air quality. As a consequence it is commonly accepted that about half of the reduction effort should be carried out domestically, as indicated in the UNFCCC Marrakesh agreements.

However, the European Commission's proposal restricts access to international offsets well below the supplementarity ceiling under both scenarios.

IETA considers that the Commission's proposal is flawed in terms of:

- International negotiations strategy ►►

- ▶ • Maintaining the competitiveness of European industry and
- Certainty for investors in the carbon market

International negotiations strategy

It is essential for any post 2012 international agreement worth its name to include the US. The US will only sign up to such an agreement if China takes on meaningful commitments as well. The Chinese leadership is considering taking targets around 2025, at a time when China is expected to have reached a satisfactory level of economic development. It would be key for any international agreement to get some commitment from China before that date.

China does not particularly need carbon finance, as at the moment it is awash with currency reserves and has no difficulty in financing its enormous new power generation programme. At the same time, Chinese leaders are deeply aware of their country's exceptional vulnerability to the impacts of climate change.

However, the Chinese, like other developing countries in the negotiating bloc will probably consider the EU's threat to withdraw carbon finance as yet another betrayal of previous commitments of massive transfer of capital, investment and clean technology that were pledged by western countries as early as at the 1992 Rio Summit, the foundation of international climate change agreement. This capital flow only started to become reality when the carbon finance mechanisms were set up under the Kyoto Protocol.

Closing the taps of carbon finance would be seen by China as a sign of developed countries' bad faith, an attempt to thwart legitimate Chinese and developing world aspirations to economic development and renege on their historical responsibility for past emissions. What is more, restricting access to carbon finance would have serious development implications for many of the other G77 countries that do rely on it to ensure a cleaner development pathway. And the global climate change problem can only be solved by finding immediately effective ways to de-carbonise these developing economies.

Furthermore, the proposal contradicts the EU objective to connect regional carbon markets as it severely restricts the use of the main linking currency, namely CER and ERUs.

The Commission's Impact Assessment to the EU ETS proposal assesses the impact on EU allowances prices of a scenario that allows unlimited access to international offsets. According to the impact assessment, this option would lead to an EU Allowance price of about €4, an increase in domestic emissions of 4% and a reduction of emissions through flexible mechanisms of 24%. The impact assessment does not, however, assess an intermediate option that would allow harmonised access to the use of credits at a level that fully reflect the complementarity obligations that are enshrined in the Marrakesh Accords. These are commonly interpreted as requiring that half of a given reduction effort is undertaken domestically and half through international mechanisms.

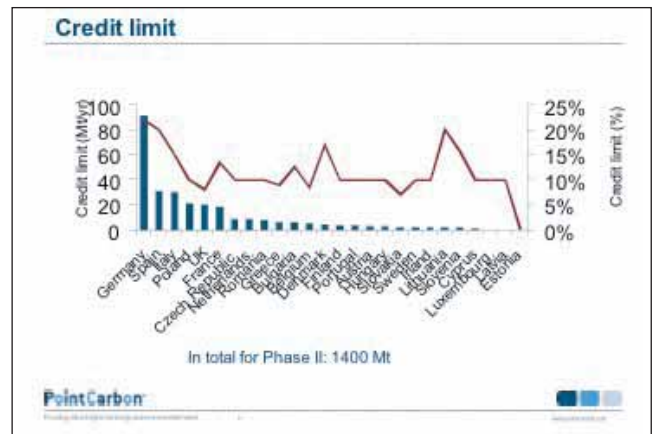
Furthermore, the assessment does not spell out the impact on demand and EUA prices of potential additional demand from the US, Japan, Canada and Australia. It is probably unreasonable to assume that in the event of no international agreement none of these countries would be buying any offsets – the politics of climate change is beginning to demand such action even in the absence of a fully-comprehensive negotiated deal.

IETA calls for a sensitivity analysis to model the likely price of EUAs in the presence of different levels of supply into the EU ETS as well as different levels of demand from other jurisdictions.

Maintaining the competitiveness of the European industry in the absence of an international agreement

The total amount of credits from international projects expected to flow into the EU ETS between 2008 and 2012 is about 1.4 billion tonnes. Until the publication of the proposal, operators expected to be able to use this amount between 2008 and 2012. If the proposal is approved in its present form, operators will receive no further credits, and will have to choose how to best use the available quotas between 2008 and 2020.

According to the European Commission, the available quota would



have been sufficient to cover nearly 100 percent of the needs of installations at EU level in Phase II (from 2008 to 2012), and will cover about one third of the reduction needs between 2008 and 2020.

Reality is slightly more complex, as the total amount of credits allowed into the EU varies from country to country and from installation to installation. For instance, German firms can cover up to 22% of their needs between 2008 and 2012 through CDM and JI credits, while firms located in Latvia and Estonia have no access at all.

In the absence of an international agreement, and with a forecast price of between 35 and 55 €/tonne¹ already in Phase II, IETA considers that reduced access to CDM-JI credits will not provide enough flexibility to firms to make up for their competitive disadvantage vis-à-vis operators in other jurisdictions that do not face a cost of carbon or will face more limited constraints. Yet providing cost reductions in this way is the most obvious and environmentally beneficial way of reducing the cost impact of Europe's emissions reduction targets.

Certainty for investors in the carbon market

As the existing pipeline of CDM-JI projects already fills the credit quota proposed by the European Commission in the absence of an international agreement, there is a serious risk that no new projects will be undertaken after 2012. As a matter of fact, according to data from the UNEP-RISOE centre, the authority in charge of monitoring the development of CDM and JI projects, the rate of new CDM projects presented for approval has already started to slow down, and this is probably a consequence of the regulatory uncertainty.

Restricted access will have serious negative effects in terms of uncertainty of the legal framework, discontinuity of investments in developing countries, and lack of confidence from investors. Carbon is inevitably a highly political market: turning the supply off and on for purely political reasons will confirm the worst fears of investors.

2) Allocation principle and auctioning methodologies

Auctioning is, in principle, a good allocation method that solves many of the allocation problems encountered so far. It is probably the simplest and most effective manner to avoid windfall profits for those sectors (eg. power generation) that are potentially able to pass through the opportunity-cost of CO₂ to their final products.

However, in the absence of a satisfactory international agreement and a single global carbon price, auctioning exacerbates the risk of carbon leakage for those sectors that are unable to pass on their CO₂ costs.

Hence, the Commission proposal seems to endorse the view that in the absence of an international level-playing field, sectors should be auctioned in proportion to their ability to pass through the costs of CO₂.

This principle should apply to all sectors, including the power-generation sector.

By proposing full auctioning for the power sector from 2013, the Commission's proposal assumes that by that time, all member states will have liberalized their electricity and gas market and that national energy regulators will allow utilities to freely pass on the cost of CO₂. This is not the case now in several member states (eg. Spain, Ireland) ▶▶

- ▶ and, depending on the degree of implementation of the forthcoming energy liberalization package, may not necessarily be the case in 2013. Hence, the Directive should specify that, in the event that regulated markets still exist in 2013, pass-through of carbon costs into regulated retail tariffs should be the general rule and should be allowed by regulators.

Furthermore, given the amounts and monetary value of EU allowances set aside for auctioning, auction design is of paramount importance.

Frequency and design of auctions should be specified well in advance of the initial auctioning date, at the very latest by 2011. If auctions are not set up in time, there is a serious risk that operators will not be able to purchase allowances and hence continue production. This is particularly true for the electricity sector, which is set to be fully subject to auctioning in 2013.

Should auction mechanisms not be operational in time for the start of Phase III, temporary solutions, such as selling allowances on the market at a fixed price, should be provided in order to guarantee the release of allowances into the market.

On top of this, given the amount of financial resources involved in the auctioning process, it would be essential to avoid sudden and excessive extraction of liquidity from operators. Such concerns could be addressed by designing auctions appropriately, eg. by avoiding having all auctions at the very beginning of the trading period, by not requiring upfront payments for the whole sums and allowing multiple year settlements, and by making use of the experience on auctions acquired in Phase II.

3) Relation with Renewable energies (RES) and energy efficiency targets

If the 20% renewable energies target is fulfilled (through direct-support measures and penalties for non-compliance), the European power generation sector will be largely de-carbonised and EU emissions will fall substantially, but a very high cost. The question arises as to what the role of the EU ETS will be in this case. Would it not be pre-empted by the policies to foster the development of renewable energies?

This strategy entails serious risks for the credibility of the EU ETS abroad, and in particular in California and the US at large. Some Californian regulators are deeply suspicious of market mechanisms and advocate command-and control measures to limit GHG emissions and foster renewable technologies. The EU strategy of combining RES targets with the EU ETS could be seen as the proof that markets mechanisms, such as the EU ETS, are unable to foster investment in clean technologies and hence to steer the transformation of industrialized countries into low-carbon economies.

The European Commission rightly argues that a price of carbon is essential to steer the development of RES technologies in Europe and promote energy efficiency. But the natural interpretation of the package now on the table is that the Commission is not in fact going to let the market, guided by price, determine the best strategies but will revert to regulatory obligation – picking winners.

The 20% mandatory RES target is in contradiction with the principles of the EU ETS for two reasons:

- If sufficient incentives and support measures are deployed by the Commission and member states, this will, to a great extent,

pre-empt the main goal of the EU ETS, ie. to exploit the most efficient emissions abatement opportunities domestically and internationally. There will be no work left for the price to do, certainly at the level of 20% emissions reductions by 2020.

- If on the other hand regulators use the EU ETS as the main tool for achieving the 20% reduction target but keep the CO₂ price artificially high through limiting access to CDM-JI more than it would be necessary to respect the complementarity constraints, the cost to Europe for a given amount of reduction of a global pollution will increase dramatically.

This is a crucial time for European utilities, most of whom have to renovate their generation park in the next few years. Investment decisions must be taken now that will have an impact for the next 30 to 40 years, and in event well beyond 2020. Hence utilities (and other carbon- and capital-intensive firms) are not merely looking at the price of carbon in 2020 to drive their investments, but at the longer term caps and price expectations. It is realistic to expect that European utilities, knowing that they will face an increasing price of carbon for the next decades, will not want to find themselves burdened with a park of high-emitting installations. This approach has two main consequences.

First, the RES policy must be shaped in such a way as to prevent the pre-emption of the EU ETS as the main tool to drive low-carbon investments.

Second, increased access to international offsets is not only desirable but necessary to maintain sufficient resources within firms for investment in abatement and low carbon technologies, and to provide flexibility for companies whose carbon reduction opportunities are not synchronized with their EU-ETS reduction obligations.

The current proposal contradicts these criteria. Therefore IETA calls for the European Commission to clarify that their expectation is that a good carbon price signal, and the clear prospect of further carbon reductions beyond 2020, will be the main driver to reach the 2020 renewables and energy efficiency targets. Only if this should this prove not be the case, should a future review assess the need for supplementary measures, such as those already foreseen in the RES proposal.

Until this is clarified, members of the European Parliament who have noticed that the RES proposal has relatively weak enforcement procedures may seek to rectify this apparent gap and in doing so ensure that it is regulation rather than a carbon price that determines Europe's emissions reductions, with all the dangers of high cost and economic inefficiency that this approach would bring.

In conclusion, the existing 2020 cap coupled with long term target of – 50% to -80% and increased access to international mechanisms should on its own constitute a well-balanced and cost-effective tool to drive abatement domestically and globally and foster renewable energy sources and energy efficiency. Mandatory targets for renewable energy and other support measures should serve only as complementary measures to foster immature but promising technologies. Once those technologies are available, the carbon price should drive the choices between them and the rate they are taken up. ■

1. Source: Point Carbon

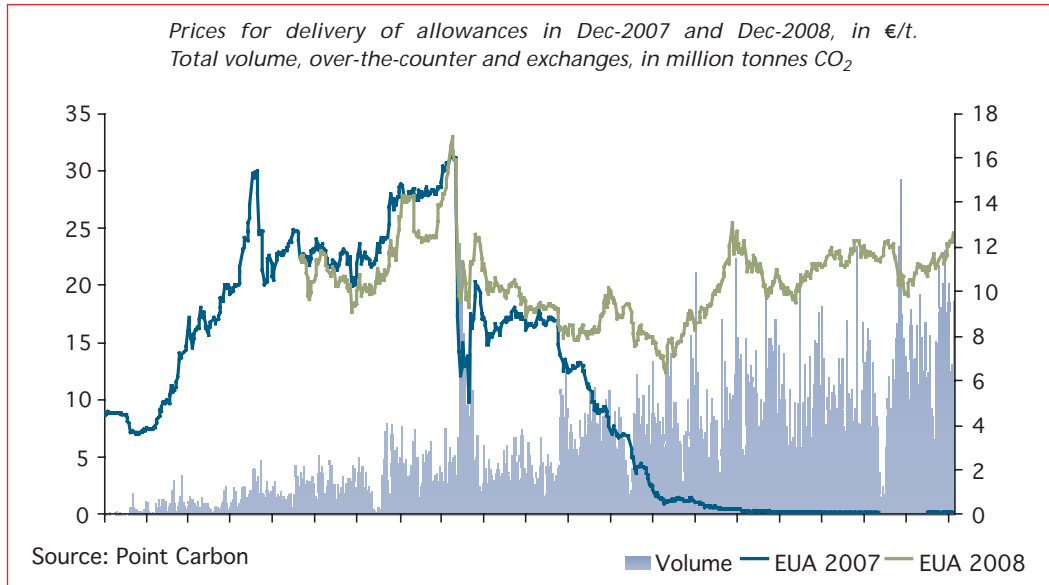
Will EU Emissions Trading Finally Deliver?

Henrik Hasselknip is Director Emissions Trading Analysis at Point Carbon

The EU emissions trading scheme has seen considerable developments since forward trading started on a modest basis in 2003. Phase 1 of the system, scheduled to run for a three-year period from 2005, was always intended to be a pilot phase. And it certainly turned out as one. Prices soared to above €30/t as market participants and analysts (including Point Carbon) expected the market to be

short, only to eventually collapse to zero as the market turned out to be fundamentally long. Prices for deliver in Phase 2, coinciding with the five-year Kyoto period from 2008 to 2012, have remained more stable, reflecting the anticipation of a stricter system in the future. See figure 1 for an overview of price development and traded volumes. ▶▶

► **Figure 1. Price development in the EU emissions trading market**



In this article we investigate the future of emissions trading in Europe by looking at three questions. First, we ask whether all the problems from the pilot-phase have been amended and whether the system is now structurally short. Secondly, we ask to what extent the market will actually result in emission reductions within Europe. Finally, we look at the potential pitfalls that could arise from linking the future of the EU ETS closely to the implementation of renewables in Europe.

Finally a short market?

The allocation in both Phase 1 and Phase 2 was set through a process where the European Commission assessed National Allocation Plans submitted by all member states. As we all know, this resulted in considerably inflated emission estimates in several countries. And as the EC, and member states, did not have consistent historical emission data to base their assessment on, the market ended up with more than 210 Mt (3.4%) length in Phase 1.

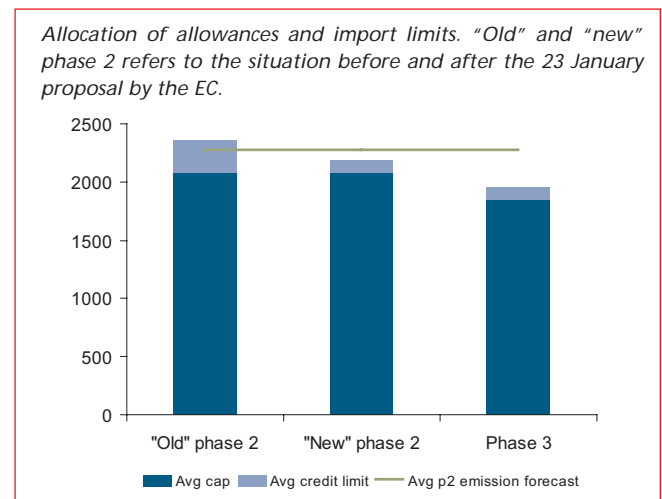
There was, however, a remarkable change in the allocation process for Phase 2. First of all, the experience from Phase 1 showed that member states' projections were not necessarily to be trusted. Secondly, with the verification data from 2005, the EC had for the first time a comprehensive set of emissions data for all countries. As a result, the allocation for Phase 2 was set about 10% below the previous phase, and will according to our estimates lead to an initial shortage of more than 300 Mt/year (before supply of new entrants and auctions to the market).

While the EC managed to cut the allocation for Phase 2 and ensure a short market, there was one aspect of the allocation that in hindsight seems less successful. As part of the allocation, each installation covered by the system will have the opportunity to use reduction credits from Clean Development Mechanism (CDM) and Joint Implementation (JI) projects to meet its target. This import opportunity is, however, not unlimited, but expressed as a percentage of the allocation. In total, the import limits account for about 13% of the allocation or some 1400 Mt over the 5-year period. This means that, in principle, the market can meet its entire reduction effort by importing credits from developing countries and Eastern Europe. Surely, this was never the intention of European policy makers. Although the EU ETS was also meant to spur the growth of a global carbon market, its prime goal has always been to lead to emission reductions within Europe. So what could be done to rectify this situation?

The answer came on 23 January this year, when the EC presented its Energy & Climate package, a set of proposals for meeting the EU's targets of 20% emission reduction and 20% renewable generation by 2020. Here, the EC suggested how the allocation for Phase 3, stretching from 2013 to 2020, should be set, including the level of CDM/JI imports allowed for the next trading period. In a move that caught the market by some surprise, the EC proposed that in a case where the EU stayed with its unilateral target of 20% reduction by 2020, the only use of CDM/JI credits it would allow was what

remained of the 1400 Mt initially set aside for Phase 2. Hence, what was originally seen as a 280 Mt/year limit, can now be viewed as a 108 Mt/year limit. The EC did propose that in the case of an international agreement, half of any additional reductions for the EU ETS can be met by CDM/JI. But the situation is clear; the EC proposal will, if approved, finally ensure that the EU ETS is both short and that a substantial share of the reductions will take place within Europe. At least this will be the case if we consider phase 2 not in isolation, but take into account that there will be banking of allowances and credits to phase 3. Figure 2 shows how the situation has changed following the EC proposal, where the "new phase 2" shows a shortage that will have to be met by domestic reductions.

Figure 2. How the EC ensured a short market



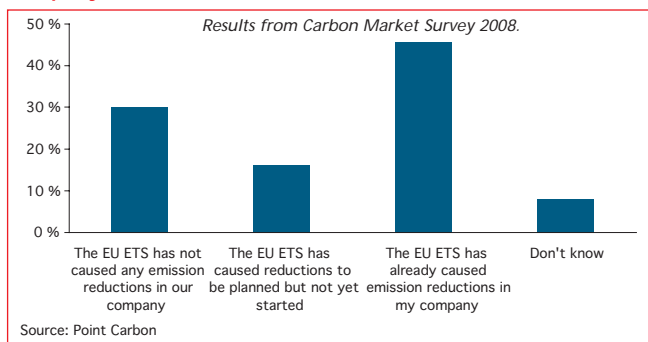
Do market participants agree?

Each year since 2006, Point Carbon has conducted a survey of market participants. In *Carbon Market Survey 2008*, more than 3,700 respondents gave their view on a number of critical aspects for the EU ETS. About 40 per cent of the respondents stated that they were involved in trading of EU allowances and/or certified emission reductions (CERs) from CDM projects. Given the status of allocation and import limits as described above, do market participants expect the EU ETS to result in actual reductions within Europe, or do they expect to meet their targets solely by imports?

Figure 3 shows some of the results from our survey. We asked "Has the EU ETS caused your company to reduce its own emissions?", and limited the sample to those respondents who were covered by the scheme. The results indicate that at least two thirds of the respondents have initiated, or are planning to implement, emission reductions of some kind. One important unanswered question is how much these initiatives will eventually deliver in terms of emission reductions. Nevertheless, market participants seem to agree that the EU ETS will in the future be treated as a short market, and that it will result in reductions within Europe.

Another way of judging the success of the EU ETS is whether the price of EU allowances is now taken into account when companies make their investment decisions. We asked "Has the price of carbon influenced the degree of new investments by your company?" Again, only companies with obligations under the EU ETS were included in the sample. The results indicate that 73 percent of our respondents found the EUA price relevant to their investments. Still, quite a large share of the respondents did not see the carbon price as a driver for investments. Does the picture change if we look further out on the ►►

▶ **Figure 3. Has the EU ETS caused emission reductions in your company?**



investment horizon? We asked the same question in relation to the long-term carbon price (to 2020), and found that only six percent of the respondents said that the carbon price had no impact on new investments.

What could go wrong this time?

We see that the EU ETS has gone through several changes in its few years of operations. In some ways, its history can be viewed as one of first setting the framework for the future and then mending the unintended problems arising from the initial framework. This certainly was the case for Phase 1, where the overall allocation was successfully corrected for Phase 2. However, by allowing for the generous limits for import of CDM/JI, the system looked like it might not after all lead to reductions within Europe, but that the majority of reductions (and investments) were directed towards developing countries. This was again corrected by the proposal for Phase 3, which will, if approved, set both the level of allocation and imports in a manner that achieves both shortage and reductions within Europe. Also, as we have seen above, market participants now expect the EU ETS to lead to reductions within their company, and the European carbon price is seen as a crucial factor for investment decisions. So what could possibly have gone wrong this time?

While it is still too early to conclude on whether the EC has actually made any mistakes this time around, there is one aspect of the future EU ETS that at least has the potential to be a pitfall. Looking to 2020, the EC has proposed not only targets and limits for the EU ETS, but also specific targets for the level of renewable generation within each member state. In fact, the targets for the trading scheme and renewables have been made dependent on each other. Thus, in order to meet the reduction target for the ETS sector (21% below 2005 emissions by 2020), the power sector will need to invest considerably in renewable generation. And vice versa, the renewable targets are expected to be dependent on a high carbon price.

There is one aspect that is important to highlight when it comes to how the two targets will interact. The EU ETS will from 2013 be an almost completely centralised process, where the rules, regulations and allocation will be set in Brussels. For renewables, however, the situation is almost the complete opposite, relying heavily on national plans and various subsidy schemes. Also, for the trading scheme there is a strong compliance regime, with targets and financial penalties on an installation level. This is very far from the case on renewables, where the only option is for the EU to open infringement procedures against countries if they fail to meet their targets. Although a strong instrument in itself, the potential threat of a court case some time closer to 2020 does not guarantee that the rate of renewable new-build will be met.

As the proposal for EU ETS Phase 3 goes through the co-decision process in Brussels, we expect the carbon market to increasingly reflect the tighter allocation from 2013. This will in itself drive up prices already now in phase 2, where our current forecast suggests an average price of €30/t for the five-year period. If the market also finds reasons to doubt that the targets for renewable generation will be met in time, it will increasingly price itself on the costs for changing from coal- to gas-fired generation, and our forecast would be even higher. Perhaps the biggest flaw of the future EU ETS is that the EC is powerless to implement a completely centralised policy process for renewables? ■

Investing in Climate Change

Mark Fulton is Managing Director and Global Head of Climate Change Investment Research at Deutsche Asset Management

Over the past few years, climate change has moved from a social and moral issue squarely into a political, economic and business trend. The science supporting the premise that humans are in part causing the warming of the planet is rarely disputed, although magnitudes remain uncertain. The IPCC, Al Gore and the Stern Review have all played important roles in raising awareness.

For an investor, this has opened up markets that are driving both listed and unlisted company opportunities. We have estimated that at the end of November 2007, something like 250 mutual funds and ETFs in climate related sectors (not including SRI funds) accounted for approximately €45bn of assets under management. We estimate nearly 100 hedge funds are investing in the theme and many private equity funds have invested and are looking at opportunities. For institutional investors, climate change still seems very much part of their overall approach to Socially Responsible Investment from where in some senses climate change emerged as a theme, but we believe has now established itself as an economic trend in its own right.

In terms of the size of the opportunity, we would illustrate this as follows:

- Investment into clean tech opportunity in 2007 now estimated at \$148bn (New Energy Finance)
- Size of low carbon markets by 2050 \$500bn pa (Stern Review).
- Demand for projects generating GHG emissions credits by 2030 estimated at \$100bn (UN)
- Carbon trading markets following wider adoption of a cap and trade system could expand to US \$1trn per year (Mark Lewis, Deutsche Bank).

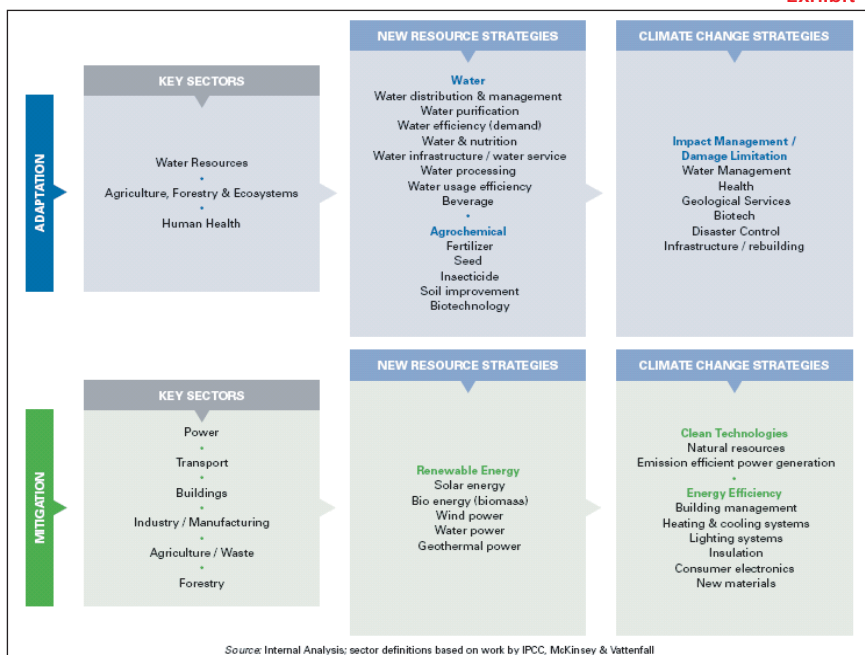
From an overall economic perspective, these are investment driven markets that generally require government support. In a situation of the consumer retrenching, which is potentially an issue for some developed economies, new climate change investment could well prove a positive response.

Investors therefore have three simple choices:

1. Accept and seize the opportunity

Accept the majority of scientific evidence and monitor further

Exhibit 1



- ▶ developments in this field, especially on the likely effects of climate change, and look for investment opportunities.

2. Take no action

Disagree with the scientific evidence because it could be wrong; or adopt the wait-and-see approach; or simply ignore the issue.

3. Follow the early movers whether you believe it or not

While being unsure and even disagreeing with the scientific evidence, look for investment opportunities created by early movers such as governments/regulators and indeed companies, which themselves are convinced enough to be taking action now.

It is the third option that appears to be the most feasible. It leads to what we call a win-win: the primary driver is to generate returns, but the environment benefits as well.

Four pillars of climate change investment

We have established four logical ways to look at what is happening in the climate space from an investment perspective. These also are the source of analysis to generate returns:

- Due to scientific analysis, **governments are regulating**, creating economic and business opportunities.
- **Carbon prices** are emerging and are central to the whole process.
- Some **corporates** will take action on competitive and reputational grounds.
- **New technologies** will play a central role in mitigating the problem.

Where are the investment opportunities?

When looking at where to invest, we start by breaking down the impact into two key areas:

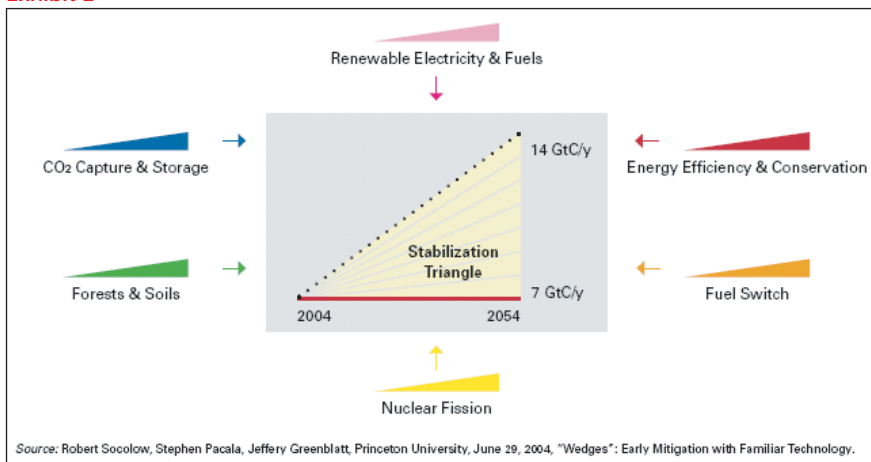
- Mitigation (abatement): Intervention to reduce the sources of greenhouse gases or enhance their sinks.
- Adaptation: Adjustment in practices, process or structures to take account of changing climate conditions.

Most investment centers around mitigation and for good reasons – it is important to reduce emissions and governments are focused on this. But many believe, as we do, that climate change is already having an impact and this will increase in intensity due to the lags between mitigation and climate effects. Hence our investment funds have included adaptation as a theme, water being a major area.

Looking at Exhibit (1) on page 26 it is clear that climate change reaches down into many sectors of the economy:

These sectors and themes can be categorized into major technology groups, in this case illustrated by the work from Princeton University that looked at how to reduce carbon emissions by up to 7 gigatons by 2054. See Exhibit (2).

Exhibit 2



The corporate response

Companies are reacting to these forces from the following motivations: See Exhibit (3).

As investors, we are particularly focused on those companies looking to create competitive advantage around new technologies, products and services. Right now, the most obvious investment opportunities

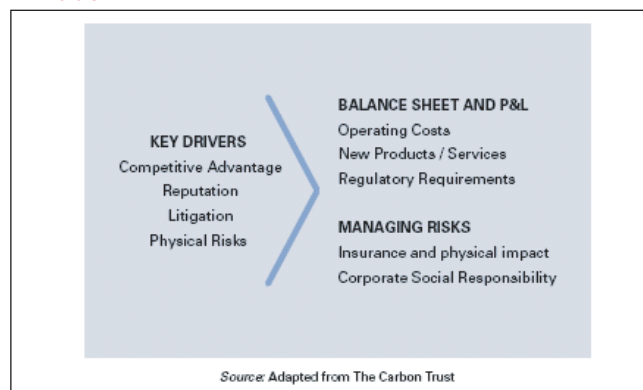
lie around renewables, energy efficiency and fuel switch. The more challenging are around nuclear, forestry, and carbon capture and storage.

What types of investment strategies are available?

Already a number of investment strategies are available in the market or are under development:

- Carbon trading/carbon offset related
- Forestry
- Infrastructure
- Clean and renewable technologies
- Diversified climate change strategies
- Agribusiness

Exhibit 3



Also connected, but not core:

- Commodities
- ESG (Environmental, Social and Governance) strategies that include climate change screens

The risk and return characteristics of these will vary and hence investor needs, as always, will require to be assessed for an appropriate match to be made. ■

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The Internet Economy: Towards a Better Future

Susanne Huttner is the Director, OECD Science, Technology and Industry Directorate

Can you remember life before the internet? Though quite a new technology, already a world without the web has become as unthinkable for many of us as a world without telephones. But what of the future? Can the benefits of this extraordinary technology be multiplied, and how can the thornier challenges be met?

The Future of the Internet Economy will be the subject of the first OECD ministerial meeting ever to be hosted in Asia. Taking place 17-18 June 2008 in Seoul, Korea (see below), it will examine the implications of the rapid growth in the use of the internet for our economies and societies and the policies needed for continued growth.



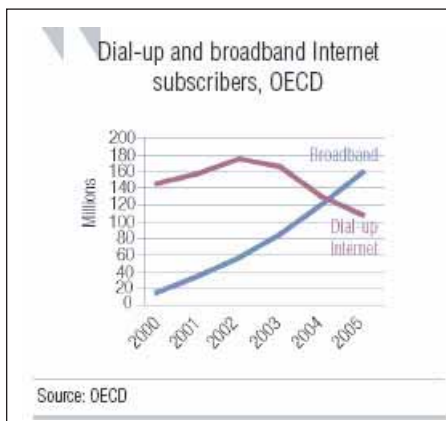
How times have changed since the OECD convened its first-ever ministerial conference on e-commerce in Ottawa, Canada, in 1998. Then, the internet was only just becoming mainstream, and that meeting tried to make sense of it all. Strategic direction was given to policies in many areas that still concern us today, such as access, privacy, taxation and consumer protection, directions that have been instrumental in nurturing online activity and helping to make it a part of our daily lives.

But a great deal of "internet time" has passed since that Ottawa meeting. Back then, Google was a month old, and was still operating in a garage with just three employees. Amazon and eBay were fledgling ventures, but have since gone on to become successful mainstream companies. And in the last few years, new services, such as iTunes, Skype and YouTube, have become part of the daily vocabulary of millions of people around the world.

Underneath, the network's infrastructure has also fundamentally transformed in the last decade. Dial-up internet access has given way to always-on broadband technology.

Broader range

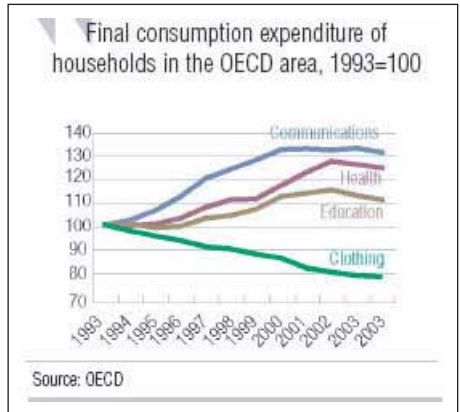
Moreover, users are accessing the internet via all manner of wireless devices, from laptops to mobile phones. Along the way, communications became the fastest-growing part of household expenditure since 1993, even faster than health and education.



Millions of people now use the internet for everything from doing homework to buying books, or playing or downloading games, music and movies. Levels of user participation and publication on the internet have also surged, from blogs, podcasts and interactive wikis that anyone can modify, through to services for sharing photos and video clips, such as Flickr and Daily Motion. Social networking sites such as Bebo, Facebook and MySpace represent another rapidly developing frontier of communication.

New spending priorities

What is perhaps less apparent is that internet-based applications underlie major advances in science, business organisation, environmental monitoring, transport management, education and e-government. Nowadays, without the internet, planes would not fly, financial markets would not



operate, supermarkets would not restock, taxes would not get paid and the power grid would not balance the supply and demand for electricity.

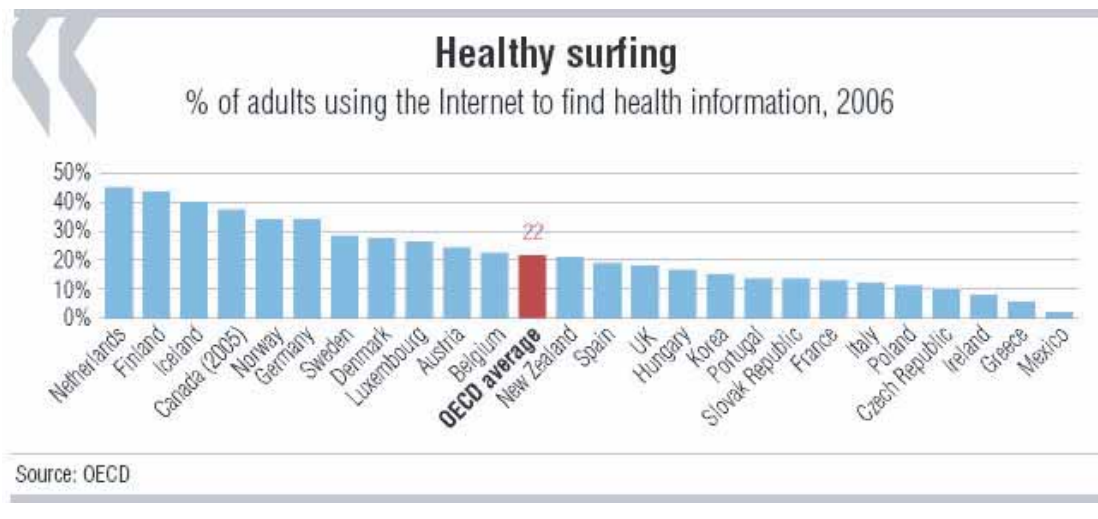
This reflects our increasing reliance on the internet for business and social activity, including health and education. Indeed, looking for information on health is becoming one of the most frequent uses of the internet. In 2006, no less than 40% of adults in Finland, Iceland and the Netherlands turned to the web for information about health, as did over 30% in Canada, Norway and Germany, to identify symptoms, understand their prescriptions, and so on. In 2005, in the Czech Republic, almost 80% of hospitals offered online consulting via emails to their patients. There is every reason to think that in the future, the network of networks will continue to reach further into our daily lives and into other infrastructures which we rely on. Whereas the internet now connects just over a billion people, in the future it will potentially connect many billions of objects, from refrigerators to recycling bins.

Radio-frequency identification (RFID) and sensor-based networks, for example, can potentially be used to track and trace everything, from what is in our shopping baskets to checking the water quality of our reservoirs. All of this information will be tied together by the internet. Transportation is set to be transformed as cars and trucks are fitted with communication technology enabling the provision of traffic warnings, roadside services, route prioritisation and even information about movements or distance between nearby vehicles to enhance safety, for instance.

Information technology has the potential to meet some of our most pressing needs, such as in helping health systems improve quality, accessibility and outcomes, all the while becoming more cost-effective. It can also help policymakers address issues such as medical error.

The creativity and innovation being fostered across a range of areas is impressive, but so too are the daunting challenges for privacy and security in an internet-centric world. For just as all new technologies have downsides, so too does the Internet, though in this case, the ramifications are particularly serious. Indeed, the internet is the scene of increasingly severe and sophisticated attacks against consumers, business and government.

There is the recent rise of "botnets", for instance, which are networks of compromised computers that can be used to launch cyber attacks on other computers and networks. Fending off these and other types of attacks and preventing widespread disruption demand increasing



co-operation between all stakeholders, and action across several different policy domains, including education, law enforcement and the technical community. Furthermore, this co-operation must occur at the global level.

In a nutshell, what we will discuss at the June 2008 ministerial meeting in Seoul (see below) is how to continue to make improved infrastructure and services available, encourage the creativity and innovation necessary to ensure economic growth and secure the future of this now critical infrastructure and the services it generates.

Nowadays it is difficult to think of a policy domain that is not affected by the internet. An obvious example is the need for regulatory reform for communication networks, or the many considerations surrounding digital content. Whereas separate and distinct networks (data, video, telephony) once provided critical communication functions, these infrastructures are now converging towards the internet. These changes cut across and challenge legal and regulatory frameworks born of a less blurry era of telecommunication and broadcasting. They may disrupt many existing business models in areas such as media and content production, but they also create enormous opportunities for innovation and growth, as companies like Apple, Salesforce.com, Electronic Arts, eBay and Google have all shown. New opportunities can also arise from more efficient delivery of government services, greater access to public sector or cultural activities, and new ways of scientific collaboration.

This makes the future of the internet all the more critical for policymakers too. Whether in addressing ageing societies, climate change and environmental management, energy efficiency, business, poverty reduction, conservation or healthcare, the implications for economic and social activities have simply become more far-reaching and profound than many imagined possible. And now our expectations of the internet and what it can deliver are higher than ever and are likely to go on growing.

Take radio frequency identification and sensor networks, for instance. These hold the promise of improving supply chain and logistics management, tracking and tracing everything from airline luggage to patient care in hospitals or homes. Are we ready for this? Are the right incentives, measures and policies in place to assure the potential is realised, without interfering with individual liberties?

Clearly, policies need to be carefully crafted and co-ordinated to guide the future of the internet economy. Moreover, as the internet is a global good, no policy discussion will go far without discussion at the broadest international level.

In Ottawa, ministers laid the ground for a decade of policies which have proven remarkably successful despite many tests, whose severity was largely unforeseen at the time, from spam to fraud and piracy. Our mission ten years later as we prepare the road to Seoul remains largely the same and reflects the OECD's own *raison d'être*: to forge a collective vision of a better future economy and society for the entire world. And that inevitably demands a vision for the future of the internet and the policy frameworks required to support it.

Realising this vision over the coming years will, more than ever, require everyone's action and preparedness. After all, who knows what the next opportunities and challenges will be?

The road to Seoul

The agenda for June's ministerial conference on The Future of the Internet Economy is taking shape. It will be built around three themes.

The first theme is **"fuelling creativity"**. Discussions at the meeting will ask how to: ensure that the appropriate infrastructures and frameworks are in place to encourage research, enable innovation and underpin new cooperative models for growth and employment; provide maximum access to public sector information and content and its re-use by the private sector; and enhance the value of e-science in innovation policy and in the OECD's innovation strategy.

"Building confidence" is the second theme. The internet cannot expand without the public's confidence in it. Governments need to work collectively to formulate effective practices and policies to ensure the security of the internet and of critical information infrastructures, that will include combating malicious software commonly known as "malware". The conference will also consider policies to empower consumers online, to ensure fair mobile commerce transactions, and to combat fraud. How to protect and manage digital identities will also absorb attention, as will discussions on stepping up multi-stakeholder, cross-border cooperation for privacy, security and consumer protection.

The third theme of the conference is **"benefiting from convergence"**. Once separate network platforms for data, voice and video are converging to a single platform based on the Internet protocol. This is resulting in a range of new services, re-evaluation of business models and changing levels of competition in formerly distinct markets. Policymakers must therefore consider several issues, such as: overarching principles needed for convergence and the transition to the generation of high speed networks; guidance to help consumers navigate the transition towards a converged network while stimulating competition; plus opportunities and challenges. ■

For more information over the coming months, please visit www.oecd.org/futureinternet or www.oecdministerialseoul2008.org

Information and communications policy at the OECD:
www.oecd.org/sti/ict

National Science Foundation/OECD workshop, "Social and Economic Factors Shaping the Future of the Internet", 31 January 2007:
www.oecd.org/sti/ict/futureinternet2007

OECD-Canada Forum on the Participative Web: Strategies and Policies for the Future, 3 October 2007:
www.oecd.org/futureinternet/participativeweb

OECD resources on policy issues related to Internet governance:
www.oecd.org/internetgovernance

Adapted from, Susanne Huttner, *The Internet economy: Towards a better future*, © OECD Observer No 263 October 2007, <http://www.oecdobserver.org/>

Europe: The New Giant of the Global Internet Economy

Viviane Reding is the EU Commissioner for Telecoms and Media

Why is the European Union leading the internet revolution?

As the world's leading economy, the European Union (EU) has delivered half a century of stability, peace and prosperity. It has helped to raise living standards, built a single Europe-wide market including 27 countries and almost 500 million consumers, launched the single European currency, the euro, and strengthened Europe's voice in the world. Recent estimates show that the GDP of the eurozone, the 15 EU countries that have adopted the euro, has leapfrogged that of the US to become the world's number one economy.

In the early years, much of the co-operation between EU countries was about trade and the economy, but now the EU also deals with many other subjects of direct importance for our everyday life, such as job creation, ensuring freedom, security and justice, regional development, environmental protection, and making globalisation work for everyone. The EU, through its executive body, the European Commission, is also active in the realm of Information and Communications Technology (ICT), funding research and technology development, creating common market rules for all EU countries and ensuring the development of a competitive market.

The EU's single market, making up one fourth of the world economy, is a driving force for economic competitiveness and growth throughout the world. It offers a sound basis for long-term cooperation on rules and standards, and provides companies with a much enlarged domestic market from which to compete globally. The EU is the biggest trading entity in the world and the world's leading exporter of goods, almost a fifth of the world total. Its advanced high-tech consumer market makes it the main export market for some 130 countries around the globe. 30% of the world ICT market is based in Europe, and it is growing by 4-5% annually.

As the telecoms sector converges with the internet economy, Europe is well placed to build on its strong position in this field. The EU telecoms sector is now worth nearly €300 billion, or 2% of EU GDP. 2007 was the fifth consecutive year of increased investment in this sector, exceeding €50 billion. This is at the level of the United States' and it is even higher than both China and Japan put together.

Following a massive investment drive, many EU companies dominate globally in key areas of ICT. In 2006 the global telecom service market was worth €971 billion. The EU share was about €300 billion, compared to the United States' €245 billion and Japan's €110 billion. Europe has 6 of the world's top 10 telecommunications providers: Vodafone, Deutsche Telekom, France Telecom, Telefónica, Telecom Italia; and BT. Other EU telecoms operators from EU countries are also succeeding abroad, such as Hutchison, Telia Sonera and Tele2.

EU companies are also leading players when it comes to ICT equipment. The 2006 worldwide telecom equipment market was worth €216 billion. The EU share was €59 billion, compared to €52 billion in the United States and Japan's €26 billion. 4 of the world's top 10 telecoms equipment manufacturers are from the EU: Alcatel Lucent, Ericsson, Nokia and Siemens.

European companies are succeeding worldwide as a result of the European Commission fulfilling its role of ensuring that the EU market remains competitive and free from regulatory borders. These are necessary conditions for the "survival of the fittest", but the Commission also supports cooperation between industry, regulators and researchers to make sure that the fittest not only survive, but go on to thrive in the global economy.

GSM is an outstanding example of how this can work: used by 2 billion people across more than 212 countries and territories, this European-developed technology is now the most popular standard for mobile phones in the world. The globally used audio compression protocol MPEG, which is now driving the revolution in digital music, was born from an EU-funded project and originated in a German university. DVB, the open standard for digital television, is growing along the same lines as GSM and MPEG.

The EU model has opened business domains such as telecoms to competition and created a single set of rules for all of the 27 EU member-countries, giving them stability and confidence to do business across borders. As a result, Europe is now the world leader in the deployment of high-speed broadband internet connections.

In addition, EU companies are at the forefront of convergence between audiovisual media, telecoms and the internet. Having pioneered GSM mobile phones, they are now leading the up-take of 3rd generation (3G) phones which offer much faster access to the internet. Mobile services and broadband technology are putting the world's largest consumer market fully online.

Europe is a leader of the global internet economy thanks to its technologically-savvy consumers, its innovative companies, its competitive yet stable market, its cutting-edge cross-border research and its world-beating ICT infrastructure that continues to grow.

Europe's consumers – taking the lead in embracing the net

Europe's ICT sector is not just about spectacular figures in terms of global trade, investment and research. The market is driven by the IT savvy European consumer, who is guaranteed to have a mobile phone, more than likely to be connected to the internet at home and on the move, downloads podcasts, listens to digital radio via the internet, shops online and manages personal affairs such as bank accounts electronically.

One fifth of all internet users come from the EU. Today more than a third of European homes with internet access have wireless connections. One in ten Europeans have created a web page. Better information and choices are now a click away for many consumers, opening new realms of social and economic possibility. 17% of European households connected to the internet use it for making phone calls.

Mobile penetration has grown to 111.8%, meaning that there is more than one mobile phone line per person in the EU. Indeed, not only are European consumers increasingly swapping fixed telephone lines for mobile ones, but they are also moving to 3G phones, opening up a huge realm of opportunity for mobile internet access. The European consumer insists on exercising choice – the key factor in a truly competitive economy. For example, since EU rules made sure that customers could switch their operator without changing their phone number began to be implemented in 2002, 65 million mobile and fixed phone users have ported numbers.

The European consumer is never slow to take up new innovations: more than a third of European homes with internet access have wireless connections. Online radio is already reaching 15 million weekly listeners in Europe. Mobile digital radio will reach 5% of European population by 2010. 11m Europeans are expected to listen to podcasts on a weekly basis by 2010. Nearly half of all internet users use internet banking. In some countries, like Finland and the Netherlands, four out of five internet users bank on-line.

There is no better illustration of the key role of ICT throughout European society than the way it makes its demographic development into an economic opportunity. By 2020, 25% of the EU's population will be over 65. It is fair to say that we associate the internet with youth, and marvel at how quickly younger generations adapt to the internet. Indeed, 80% of Europeans aged 16-24 are regular internet users. However, older Europeans are also important consumers with a combined wealth of over €3000 billion. That is why we are investing more than €1 billion in making the internet a paradise for silver surfers, making sure research and innovation produces technologies that help them get online, and that ICT helps them.

Europe itself could also become a lead market in ICT for "ageing well". European companies are leading the way in this niche market. The French e-Sidor are producing innovative computers that replace the mouse with a touch-screen interface, while Ordissimo have ►►



Tallinn – An Intelligent City

Tallinn, the capital of the Republic of Estonia, is located in Northern Europe in the northeast part of the Baltic Sea Region. The modern Baltic Sea Region, the fastest growing business region in Europe, consists of 10 countries with a combined population of 90 million people. The City of Tallinn, with a population of more than 400,000, is the driving force of Estonia's economy.

Tallinn was the first city in Eastern Europe to be chosen as one of the seven most intelligent cities in the world (2007) — for specific e- and m-solutions that facilitate life, and the new living environment based thereon that is friendly to humans and the environment, while also being efficient.

The creation of various solutions based on the Internet and mobile communications, as well as other digital designs and services, have become an inseparable part of the Estonian image. It's not without reason that this small country is sometimes called "E-STONIA" (or "E-ESTONIA") — because everything associated with "e" seems to be successful and accepted by the people.

Indeed, it is naturally assumed that Estonians file their tax returns without moving from their computers and that they pay for parking with their mobile phones. Seventy-nine percent of the population uses Internet banking services at least once a week — a result that puts Estonia in first place ahead of such Internet-friendly countries as Finland and Norway (Nielsen, 2007). All types of e-services are made more attractive by the fact that, in the next few years, the entire country should be covered by wireless Internet. Currently there are about a thousand public WiFi coverage areas, half of them free.

The concept of "e-government", a government that functions without paper, includes an e-tax office, e-elections, and the citizens' access to state registers and databases. Undoubtedly, the opportunity to vote without leaving one's computer will increase in popularity. During the next few years, with the

implementation of the next innovation — m-elections — one will be able to vote for one's favourite candidate by mobile phone.

The ID card is also the key to the services intended for officials and entrepreneurs. The number of applications is extensive and will further increase in the future — concluding contracts and encryption of data. A solution that is becoming popular as a secure alternative to the ID card is encoding certificates for personal identification and digital signatures on mobile phone SIM cards.

E-customs and e-notaries make a contribution to the effectiveness and security of business transactions. The Commercial Register's Entrepreneurs' Portal enables the expedited processing of applications for new companies — in only two hours. No one is surprised by the fact that the NATO cybersecurity centre will be established in Estonia.

Skype, the Internet telephone created by Estonia's most famous programmers, is justifiably considered to be the paradigm of Estonia's e-success and potential. "When people do their everyday work with dedication, things develop that change the world," commented IT guru Linnar Viik, with typical Estonian modesty.

Important connections are also revealed between Estonia's e-development and its scientific potential. The preconditions for a knowledge-based economy are created by an effective educational system as well as fundamental science. The knowledge and experience of Estonians is not only to be found between the covers of scientific publications, but is often utilized in actual solutions — such as a laser with new capabilities or useful bacteria in yogurt.

For further information please see www.investor.tallinn.ee

- ▶ developed 'the world's most simple computer' to make it easier for the aged to go online.

The internet is beginning to play a role in everyday life and the way business is done in Europe

ICT has a big role in the overall economy, with the majority of businesses and countries giving it a central place in plans for modernisation and increasing competitiveness. European businesses devote 20% of their investment to ICT, and it accounts for 40% of Europe's productivity growth and 25% of EU GDP growth.

TLD	December 2007
1.COM	71 025 893
2.DE (Germany)	11 236 036
3.NET	10 601 207
4.CN (China)	7 996 814
5.UK (United Kingdom)	6 445 465
6.ORG	6 332 543
7.INFO	4 919 187
8.EU (Europe)	2 691 303
9.NL (The Netherlands)	2 672 368
10.BIZ	1 894 273

All sectors of the economy are going online, as can be seen from the booming market for .eu web domains. .eu was launched two years ago to provide residents in the EU – citizens, associations, companies, etc. – with a new internet space that allows them to promote their own European identity on the internet. With 300,000 new domains registered in 2007 alone and 2.8 million since its launch in 2005, .eu has become Europe's fourth most popular national web domain and the ninth most popular worldwide. Within the EU, ".eu" is only surpassed by well established national domains such as Germany's ".de" and Britain's ".uk", while globally, only .com, .net, .org, .info and China's ".cn" can claim more registrations.

The growth of .eu is particularly strong in countries which do not have a well-established national domain already: to name but two, the number of registrations for .eu from Poland and Lithuania increased by almost 50% in 2007. .eu labels are increasingly used by well known brands from AirFrance, Versace, Dexia, Illy, and Milka to Greenpeace.

The EU is a marketplace within which businesses and individuals feel comfortable operating, as shown by the success of the .eu web domain. A third of EU citizens have purchased goods or services online. The popularity of e-commerce with young Europeans means that in the future it is bound to grow quickly. E-commerce is particularly popular in countries where high-speed internet is most widely available such as Denmark, Sweden, the UK or the Netherlands where more than one in two people were internet shoppers in 2007. In the EU the percentage of enterprises' total turnover from e-commerce was 12% during 2007.

European content – producing many Oscar winning performances

At 5.4% from 2006-2008, the EU outpaces both the US and Japan in terms of IT services growth (5.1% and 3.5% respectively during the same period), helped by Europe's booming supply of creative online content, that will reach an estimated €8.3 billion by 2010, a growth of 400% from 2005.

The quality of European cinema, for example, will impact the online market for digital on-demand movie distribution which is expected to generate revenues of €1.2bn by the end of 2010. We can even rate the strength of Europe's content in terms of Oscars. European cinema is celebrating a hat-trick of victories at the Academy Awards, with films triumphing in Hollywood for three years in a row. Austrian-German co-production *The Counterfeiters* was this year's best foreign language film. Last year, the same Oscar went to Germany for *The Lives of Others*. In 2006 French film *March of the Penguins* was voted Best Documentary Film. These films all received funding from an EU programme called MEDIA that supports the distribution and promotion of European films outside their originating country. MEDIA gave more than €2 million to Europe's three Oscar winners.

Europe's export stars in the world of film are only the tip of the European content iceberg. 'Cool' markets are building successful niches in Europe, such as online music which generated €120 million in 2005, and is expected to grow to over €1 billion by 2010. The total digital segment (mobile and online) is thus expected to reach 20% of total European music revenues by 2010.

The quality of European content in areas such as cinema, music, publishing and video games will be a major source of a growth for the internet economy in the near future. Indeed, we expect a huge expansion in digital distribution of European content as more of it is available online and more people can access it through high speed broadband or mobile internet.

The European market for games downloads to mobile phones is ahead of the US market. Games-on-demand services over broadband networks and interactive TV games are also more developed in Europe than America. The total value of the European digital games market was almost €700 million in 2005. Notably, half of this was contributed by the mobile sector.

The European online video games market is booming. By 2010, the digital games market is forecast to €2.3 billion, a third of the total. For example, UK games developer Introversion Software completely turned around its fortunes in 2005 when it began putting its games online, selling more in three weeks than it had managed in nine months through traditional channels. Several forms of digital games distribution are being adopted rapidly in Europe.

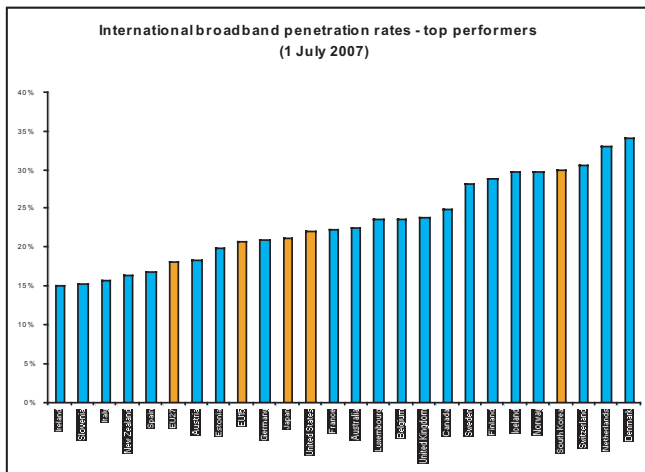
Once people become familiar with an on-line service, they rarely go back. The explosion of online book and music sales are a case in point. In order to keep consumers buying goods and services online, the European Commission will make the clarification of e-commerce users' rights a priority, through its development of EU-wide consumer laws, and through specific rules for online sales later this year. This should increase consumer confidence throughout the EU, which will further boost this burgeoning area of the internet economy, offering European businesses a market full of online buyers.

European internet infrastructure in the fast lane

Europe is the world leader in broadband deployment and is consolidating its lead in penetration of mobile phones and 3G services over the US. There are now over 90 million fixed broadband access lines in the EU, 15 million more than in the US and Canada combined, and twice as much as in Japan and South Korea combined (where there are a little more than 40 million). In December 2007, the broadband penetration rate for the EU was 20%. We expect penetration for the whole European Union to reach 30% by 2010. When it comes to high speed internet, Europe is very much in the fast lane.

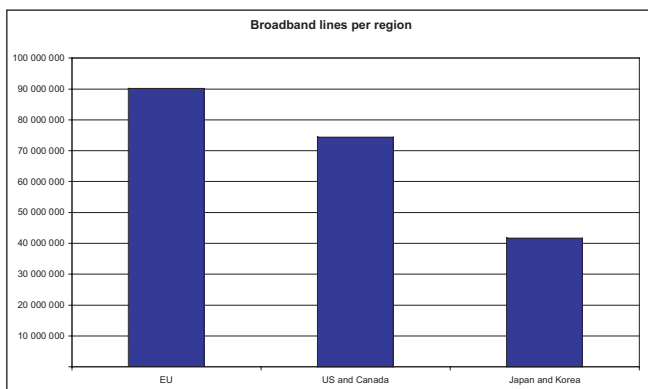
The European mobile market is the most dynamic in the world and continues to expand in revenues and subscriptions while growing in sophistication. Having taken off in 2007, European 3G services are some way ahead of the United States in penetration. In 2006, 3G penetration was just over 1% in the US and 11% in the EU. In the EU, this figure nearly doubled to roughly 20% in 2007.

Another vibrant new service is Voice over IP, which gained much consumer attention last year as it continues to replace traditional use of fixed line telephones. Use of VoIP services is highest in France, where it accounts for 14% of all fixed traffic. The latest ICT developments need to be nurtured. Even if they are very useful and ▶▶



popular with consumers, such as VoIP, their potential can be frustrated by divergent approaches to management or regulation of such services in different countries. As I said, in the single market, once innovative technologies with mass market potential such as VoIP establish themselves on the market, they quickly thrive among European consumers.

Convergence and seamless access to content and online services is the future: TV and phone calls over internet, internet over cable and



mobile phones. Players from different sectors are buying their way into new communications market thanks to rapidly-changing innovative technologies. It is no coincidence that many of the boldest examples of this are happening in the EU. ICT start-up companies are thriving in Europe. Take Skype, which allows phone calls to be made over the internet. It was created by entrepreneurs and software developers from Sweden, Denmark and Estonia. Skype exploded onto the internet scene thanks to its sheer convenience, and now counts over 275 million users.

Europe is a standard-bearer for new technologies

What is the recipe for the success of Europe in the global internet economy? To use the internet, people need confidence that it is safe, reliable and convenient. They will expect access to original and high quality internet content and services. The personal touch, variety and service they will expect in any other part of the economy. However, in the fast moving ICT sector, they need to know that if they buy the latest hi-tech device it will not quickly break down or become defunct.

Internet services must be provided by companies that compete to offer low prices and higher quality. And to complete the circle, it is obvious that these companies are dependent on being able to access the latent consumer demand as easily as possible. This is where the EU comes in, encouraging industry cooperation and offering a consistent single market (instead of 27 separate markets) giving operators the confidence to build projects on a large scale.

The ingredients of the European recipe for success are cooperation with operators, regulators and other market players, fostering competition and reducing fragmented policy approaches by national regulators by promoting market rules at European level.

The GSM standard became global because of strong cooperation between European governments, network operators and industry in the late 1980s which allowed its rapid formal recognition as a

standard in 1989. Behind its success was a long period of research and agreement on standards. Europe's common GSM standard and culture of working towards a common goal contrasts with the US, where a number of different, competing mobile standards have held back the market. The result is that today, at more than 550 million, there are twice as many mobile phone subscriptions in the EU than in the United States.

Ten years ago mobile phones were unattractive, user-unfriendly, and prohibitively priced. Twenty years ago, their massive take-up was even harder to predict, when telecoms markets in Europe were fragmented and there was little cooperation between interested parties, particularly network operators and industry. It grew steadily in Europe during the 1990s and today 94% of Europeans today have GSMs. From this base the GSM standard became a global phenomenon. It is projected to reach 3 billion people in 2008 or one half of the planet!

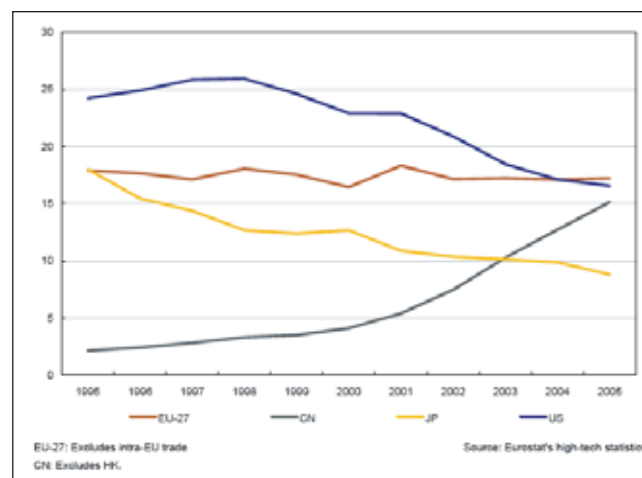
Today, the picture is much more complex: more sophisticated technologies, more markets, more international competition. The European Commission is cooking up new triumphs, supporting further research and agreement on standards in areas such as 3G, Mobile TV and wireless network technology (Wifi and Wlan). For example, over 88 million subscriptions (16% of total subscriptions) in Europe are now 3G, which really took off in 2007: For the first time this year, there are more 3G networks offering commercial services than regular GSM networks.

This menu of technological advances, which are easy for consumers everywhere to use in daily life, can use Europe's single market to grow into the mass market giants of the digital age. Having seen the success of the mobile phone, who would bet against the internet-capable mobile handset being to the 21st century what the car was to the 20th century?

The future of the internet – made in Europe

The European Union produces almost one third of the world's scientific knowledge and is at the cutting edge of ICT R&D, which accounts for 26% of its overall research effort. A 2006 survey of the top R&D-active companies in the world found that 36 of the top 100 were EU companies, neck-and-neck with the US which had 39 companies. From 2007 to 2013, the EU plans to up the pace by investing €9 billion in ICT research. This will focus on key areas where Europe has competitive advantages and established strengths: communications, electronics and photonics, and software systems and architecture.

The European Union encourages the most highly innovative and revolutionary research through programmes such as FIRE – the Future Internet Research and Experimentation expert group – which unifies experimental research on internet technology from all over Europe. FIRE builds on Europe's world leadership in mobile and wireless



technologies and ensures that it can continue to lead in the future era of convergence. FIRE's research identifies basic flaws in the Internet's architecture and finds long-term solutions to ensure that there is no restraint to the internet's capacity to absorb innovation, particularly by improving the internet architecture through newer internet protocol. ▶▶

- ▶ By making experimental research sustainable, Europe can ensure a stable supply of visionary research. FIRE supports large scale experimentation because the innovations it produces give fruit to new and popular products and services. FIRE allows interaction between industry and researchers so that new ideas are close to the marketplace.

Cutting edge research thrives in an environment where uptake is assured if it offers important benefits to consumers and businesses. Within the EU market businesses and researchers are able to think long-term because the EU is committed to ensuring the smooth yet rapid evolution of the internet economy. The European Commission brings players together from different sectors and countries to agree common long term approaches that are in their interest. European researchers are confident in pushing the hottest internet developments towards commercial use through programmes like FIRE because they know that the EU will make sure that consumers, businesses and public authorities are made aware of their general benefit, and fired up to use them.

For example, the "Internet Protocol" (IP) gives any device connecting to the internet a number, often called an address, so that it can communicate with any other devices on the net. The current version, IPv4, provides for more than 4 billion unique addresses. However, with rapidly increasing demand for internet-based services and many new types of device now being connected to the internet (domestic appliances, sensors, handhelds, etc) the global supply of internet (IP) addresses is likely to run out by 2011 if no action is taken. It is necessary to implement a new internet protocol, IPv6, which will make an almost unlimited amount of IP-addresses available. This is very much a case of a stitch in time saves nine.

Thanks to the combined efforts of researchers throughout the EU, IPv6, the internet architecture of the future, is now ready for deployment. However, the EU's role in supporting the deployment does not stop once a technology is developed. People and organisations may not see a short-term need to change over.

Businesses and web sites need to be encouraged to move ahead positively. This can be best achieved by collective action at European level. That is why the European Commission is encouraging public services and leading web sites to make the move to IPv6 and its unlimited potential for expansion. With such strong research and a vibrant market, I am confident that the European ICT sector will continue to burn brightly for years to come.

Challenges for the future

It's important for the future growth of the internet economy to make sure that we are all ready to face the challenges of the future and ready to foster an innovative approach. This requires a vision that supports the hottest experimental research and ensures people are ready to make "a stitch in time" so that the market is ready for new technologies. It is because such an environment exists in the EU that it has been able to become a key player in the global internet economy.

The next generation of the internet economy could largely roll out in Europe through the expected consumer take up of mobile internet. Europe will lead this major jump in internet use thanks to the emergence of cheap and fast internet services across the EU and coordinated policies to ensure the consistent availability of quality mobile access to the internet throughout the EU.

The European Commission is in fact pushing towards a single telecoms market for the European Union to maximize these benefits in all areas of the economy. These will result in the EU leading the way in mobile access to the internet.

The European Commission supports dynamic industries that use pioneering technologies that make the internet more accessible and relevant to daily life. It also actively supports research into future innovations that will change the way the internet works, while continuing to ensure that potential barriers to already emerging technologies will not become barriers to the growth of the internet economy. ■

Shaping Policies for Creativity, Confidence and Convergence in the Digital World

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The expanding role of information and communication technologies (ICTs) in facilitating and supporting new global businesses and new business models has significantly increased the possibility for unintended consequences for policymakers in the digital world.

Business interactions have increased dramatically with the digitization of information, modularization of workflows and processes, and the increased capacity of broadband networks. Today, business both within enterprises and across value chains is no longer bound by geographic and temporal constraints in trying to optimize performance, delivery of services and efficiency of operations. Convergence in this new context is no longer just a question of how devices and networks interoperate, but rather a question of how services and business models arise and interoperate on the internet, which has become a platform for computing, communication, innovation and interaction.

As this new concept of convergence has evolved, enabling follow-the-sun service and support models, the idea of the globally distributed and networked business has also evolved. These developments have significantly expanded where and how customer services and support are provided. In turn, it has generated overall cost savings for companies and consumers, and provided employment, skills transfer and capacity building for less developed economies.

New policy challenges and opportunities

The global nature of many companies' operations cuts across the jurisdictional boundaries of legal systems as well as local languages

and cultural norms. Legal frameworks and cultural norms are often developed at a local or national level and may find regional similarities, but are stretched beyond comparison and coordination at global levels. In order to limit complexity and enhance compliance, global companies often seek to deploy global policies and practices to accommodate regional, national or local constructs.

The global nature of information flows has been recognized by regulators and policymakers both in the European Union (EU) as well as the Asia-Pacific region and both currently have efforts underway to develop global approaches to information flows. Many of these issues are anchored in the question of confidence of users – governments, business, and citizens in their online interactions. These issues pose specific challenges for policymakers because information flows across borders and beyond the jurisdictional remit of any specific national regulatory authorities. In fact, within nations information flows across sectors and can even pose domestic problems related to policy development and enforcement. In evaluating the challenges of convergence and confidence in new globalized environments, issues of innovation, capacity development and investment must also be taken into account.

More and more, policymakers will need to think beyond national laws and regulations to recognize the impacts of globalization both on their markets and on those companies that drive their markets. This recognition requires policymakers to consider how national policies impact their ability to attract foreign direct investment and foreign companies to locate facilities in their country. This is especially relevant for developing economies whose national policies often determine their ability to foster investment, develop capacity ▶▶

- ▶ and skills, deploy infrastructure and promote innovation. The ability of economies to succeed across these factors will help determine their ability to bridge divides, increase inclusion, drive economic growth and provide social benefit.

Consumers are likewise no longer limited by either geographic or temporal proximity to accessing services online. These services may range from shopping to download of information, news and entertainment, to financial services, to medical advice and to countless evolving business services. Among the new phenomena are the more interactive experiences including distributed gaming, social networking, and virtual worlds all of which include consumers as creators and publishers of content. Consumers have also become participants in news, information and entertainment services through online video services, blogs and other technologies.

These new access, participation and distribution models facing consumers create new challenges for policymakers. First, consumers and their related information flows are becoming more global through accessing content and services across jurisdictional boundaries. A fundamental question, which is not yet completely resolved, is: how does one establish or demonstrate jurisdiction on the internet? Is a service available on the web present in all jurisdictions in which the site can be seen? Policymakers are also faced with a question of how to protect consumers in markets beyond their jurisdiction. Both APEC and OECD are involved in work related to cooperation on enforcement to establish ways of investigating and working across various types of authorities.

More daunting than the cross border flow of information is the changing role of the individual – moving from customer to creator and publisher. While companies are also implicated in policy issues related to creativity, the new role of consumers is creating some of the greatest challenges for policymakers in both government and business. New services are being developed that allow customers greater ability to interact with each other. Ebay, an online auction site, was one of the first, and remains one of the most successful versions of developing an interactive community. Ebay has also been very successful at developing internal governance structures, including reputation indexes and dispute resolution mechanisms. In this case, consumers are acting as buyers and sellers, and while they have effective internal governance structures to meet transactional needs, they may run into external policy issues related to taxes, the transfer of rights (some licenses, for example, may not be transferable) and other myriad issues that impact real world transactions.

New services like social networking and online sharing of personal videos have increased the social interactivity of the web and are now dealing with issues of governance. These services allow individuals to be publishers on the pages they have created or obtained. Again, real world policy issues related to intellectual property protection, fair use, defamation and others are relevant and may exist beyond the internal governance structures.

Furthest on the edge of innovation are completely virtual communities both social and gaming – like World of Warcraft and Second Life. In these communities, content is generated and people take on avatars (graphic representations of persona) that interact in virtual settings. While the gaming spaces create fewer issues because people operate within the rules of the game, the more social virtual worlds are starting to deal with real world issues in the virtual space; predatory behaviour being the most prevalent. These worlds have caught the eye of external law enforcement authorities who are trying to determine whether violent actions in the virtual world have any ramifications in the real one.

New policy waves: India as an example

It may be useful to look at an example of policy change that is taking place in India to see these principles in action. A case in point is the use of converged technologies to support microfinance applications and the appurtenant policy considerations.

The remarkable growth in access to mobile telephony in developing markets has created the possibility of delivering new financial services by leveraging secure, low-cost mobile networks and platforms. Commercial entities and policy makers are starting to embrace the vision of a transformational change. Contemporary

financial service models can be unbundled to allow delivery of simple service propositions, enabled through a mobile phone and targeted directly at what customers need. 'M-transactions' encompass m-banking services [eg. deposits and account management], m-transfers [eg. distribution of state benefits, or person-to-person remittances] and m-payments [eg. settlement of bills and payments for goods and services].

A government policy goal common to many emerging economies is to increase access to financial services, especially micro financing applications, which benefit less well off sectors of society, but often have the most direct impact on local social benefit. This requires a more flexible, risk-based regulatory regime with a 'lighter touch' intervention to reflect simple services, typically involving much lower capital/or financial values than in mature economies. Industry will need to work with some of the regulators that have less experience in the application of these new technologies to established services to explain what risks may exist and how they can be mitigated or addressed by policies and supported in technology safeguards.

Exposure to TV has also brought about a major change in psychographics of the rural population, contributing to an increase in the aspirations and demands. Also, economic development of the last few decades has increased disposable income and upward socio-economic mobility. Data published by the National Council of Applied Economic Research shows that the income of rural India has grown several-fold in the last 10 years and according to a recent McKinsey survey, rural India will be a market worth \$500-\$600 billion by 2020.

New partners in policy development

Policymakers are also rethinking the role of non-governmental actors in the policy/regulatory space.

In the realm of privacy, the evolution of trust marks and other accountability agents is just one example of private sector actors that supplement or leverage regulatory actors. There have been previous periods where concepts of self-regulation and co-regulation have been widely discussed. Today we find a middle ground consisting of private sector actors with either government oversight or backstop as the first line of defence. The use of such private sector actors leverages scarce government resources for enforcement and, in theory, allows them to focus on the truly bad actors that intend to cause harm or defraud.

Conclusion

Policymakers must be aware that new technologies are a basis for providing innovative new government, business and citizen services. Furthermore, these new technologies are capable of enabling greater inclusion and social interaction as part of supporting economic growth and providing social benefit. The technologies must be recognized, however, as a means to accomplishing these objectives and not as an end in themselves.

Policymakers must also recognize that the policy and regulatory framework of a country can either facilitate or impede the beneficial use of these technologies. Application of these policy and regulatory regimes must be transparent and predictable and support fair, open and competitive markets. The combination of appropriate policy/regulatory frameworks and deployment of new technologies that are tailored to the economy's level of development will better enable countries to successfully participate in and reap the benefits of the information society.

In the upcoming OECD Ministerial on the Internet Economy, there will be a focus on creativity, confidence and convergence. The International Chamber of Commerce (ICC) has been actively working with the Business and Industry Advisory Committee, the officially recognised representative of the OECD business community, to ensure these considerations are presented. ■

For more information on ICC's policy positions, please visit the following:

EBITT homepage - [http://www.iccwbo.org/policy/ebitt/Information Compliance policy statement](http://www.iccwbo.org/policy/ebitt/Information%20Compliance%20policy%20statement)
http://www.iccwbo.org/uploadedFiles/ICC/policy/e-business/Statements/373-472_information_compliance.pdf
Telecoms guide 2nd edition - <http://www.iccwbo.org/uploadedFiles/ICC/policy/e-business/Statements/TELECOMS%20LIBER-edition%20Final.pdf>

Telepresence@InfoComm08

Carol Zelkin is Executive Director of the IMCCA, the Interactive Multimedia Collaborative Communications Alliance

Telepresence technologies are rapidly addressing the need for virtual “in-person” meetings for corporate, government, education, entertainment, manufacturing and healthcare markets, among others. In this all new, full-day program, leading telepresence manufacturers will discuss present and future applications of telepresence technologies and services, and current telepresence users will share their case studies with attendees. You will be able to learn from experts how to capitalize on the latest high-end audio and visual communications that make “being there” a reality.

What really is telepresence? More importantly, what really isn't telepresence?

What has become clear is that there are two distinct definitions of telepresence forming. They are not necessarily at odds with each other, but the second is a slightly cynical version, couched in more specific and familiar terms used in video collaboration today.

Telepresence – definition number one: telepresence represents the use of a number of technologies, aesthetics and acoustics that together allow a person or people in one location to meet and collaborate with a person or people in another location (or locations) where the experience simulates all people being in the same location. Implied in this experience is the understanding that the technologies, aesthetics and acoustics involved in the simulation are, or should be, practically invisible to the users.

Telepresence – definition number two: telepresence is a video conferencing industry buzzword that represents a class of products that purportedly perform much better than the perceived past video conferencing norms. Any one of a number of differentiators (possibly including high definition video, spatial audio, large screen displays, images projected or reflected in front of a camera's eye line and/or other features) can be identified as the reason a product in the first person (your product) is truly telepresence, and the lack of any or all such differentiators can be identified as the reason a product in the third person (their product) is not truly telepresence.

Regrettably, some of the manufacturers in the space are using the term “telepresence” as a buzzword even where it is not remotely appropriate. By any definition, telepresence requires a life-size element to be considered part of that category. However, one large manufacturer has decided to call all of their products “telepresence” regardless of the number or size of their displays, and another manufacturer has begun referring to their executive desktop units as “personal telepresence.” This blurring of the lines may help these firms in their short term marketing, but the confusion that will definitely ensue will hurt the conferencing industry in the long run.

Why telepresence is great

It would be difficult to come up with a more attractive appeal than the one being used by the current telepresence manufacturers. In comparing themselves to traditional video conferencing systems and products, they stress the following three points:

- The system will meet all of your visual conferencing needs with a quality that is almost lifelike, reducing the difficulties and expenses of travelling.
- Unlike past video conferencing products, telepresence systems are reliable – the calls always go through.
- No specific training is required to use the systems. There are little or no control buttons. Just walk into the room and use it.

It is not difficult to understand why such a message is being widely embraced. Who wouldn't want to invest in a technology that is 100% successful, 100% reliable and requires no knowledge to use?

Beyond these messages though, there is a large list of advantages that a telepresence system will provide:

- A meeting's remote participants will typically appear normal size – as if they were in the room with you.
- Visual details will typically be extremely sharp – you will be able

to make out subtle changes in facial expression, which is a key part of interpersonal communication.

- Eye contact between local and remote participants is typically excellent – people will generally look like they are looking at whatever they are actually looking at - and this is important when building consensus and trust in a meeting.
- Sounds are typically directional, just as they would be in a face-to-face meeting – things happening to your left sound like they are happening to your left, and you can hear side bar conversations, just like in a same room meeting.
- Visual images and sound will happen in virtually real time – there is no noticeable delay between participants over great distances. People can interrupt and challenge just like physically being there.
- Depending upon the system and/or services you purchase, an operator or concierge may be at your disposal, connecting calls for you as quickly as you feel you need them. As a user it is just like walking into a meeting room and starting the conversation.

Experienced together, the list above tremendously enhances the quality of a meeting with remote participation. Users will experience less “technology fatigue” than they would have in a traditional video conference. Meetings will be more productive, livelier and more interesting than they may have been in the past. When used specifically in its optimal situation, comparing telepresence to a video conference is like comparing a live orchestra to someone playing a harmonica.

Why telepresence isn't really a single universal solution

Most of the conferencing industry has firmly embraced the hype of telepresence. If you are one of the new firms in the space you're quick to announce that your product is the best thing since sliced bread. If you're one of the traditional conferencing manufacturers you're quick to embrace the onrush of new customers for whom you have a suite of solutions that includes telepresence amongst other offerings. If you're one of the industry analysts you're delighted with the excitement in the space you cover. Everybody is happy.

Remember what your parents said about things that sound too good to be true?

Telepresence systems perform well in very specific applications because of some very specific parameters. Veer from these parameters even a little and the experience collapses.

First of all, the manufacturers' positioning that “telepresence is video conferencing that works/is reliable” requires some scrutiny. Why has traditional video conferencing had reliability issues? The most typical reason for video conferencing failures is the lack of a robust network to support the calls. If your network can't support IP calling rates between devices at 384KBps to 768KBps how will it support telepresence calls requiring anywhere from 6MBps to 20MBps? You're either going to need to buy a whole lot of additional network infrastructure or move your telepresence calls to an off-premises (paid) network. These are both models that the telepresence manufacturers suggest. They are also both models that would “fix” most of the problems experienced with traditional video conferencing.

Another reason traditional video conferences have failed is the inherent instability when trying to call infrequently used endpoints. As an example, your New York to London weekly call may usually work, but your annual Fiji to London call does not. Or similarly, your regular internal calls work, but your calls to a new customer or client site do not connect.

Does telepresence fix these problems? In the first example, telepresence systems are so expensive that you'll never put one in your Fiji office or anyplace where there would be necessary but infrequent usage – the return on investment would never be justified for the limited applications. In the second example, unless a client or ▶▶

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- ▶ customer has bought the exact same product from the exact same provider that you have, it would take a string of minor miracles (involving connectivity, compatibility, bandwidth, etc) to connect a telepresence system in your firm's offices to one at their site. Put simply, telepresence is like a luxury car where the steering wheel has been removed and you have about five destinations you can select with a single button on the dashboard. It's luxurious, comfortable, and very, very limited.



Beyond the comparison to traditional video conferencing, the basic telepresence concept presents some challenges in and of itself. When you do have two locations that always need to connect just to each other, each with a non-mobile compliment of staff, then telepresence is the clear answer for high quality, effective communications. But, what if you have three locations...or four? Telepresence systems have really struggled with these multipoint scenarios. One solution is called "voice switched" where a complex algorithm figures out who is speaking and makes sure that person is visible on one of the displays at each location.

Another solution is "continuous presence" where everyone at each participating site is visible on the displays (in a smaller image) at all times. While both of these solutions allow for multipoint meetings, it really isn't telepresence anymore. In the first scenario you have to sacrifice the eye contact with those that aren't speaking – which frankly is sometimes more important than looking at who is speaking. In the second scenario, you've sacrificed life-sized images, directional audio and all of the other things meant to differentiate the experience. In this frequent real world application the whole reason a firm has invested heavily in a telepresence system is gone. Also gone is telepresence favourable contrast with legacy video conference systems which can do the very same job with a rapid return on a much lower investment.

What will you learn at Telepresence@InfoComm?

- What is the history of telepresence?
- Which manufacturers are providing telepresence systems?
- What are the differences between the available products?
- What should you look for when trying to select the right one for your firm?
- Who are the current experts in the field?
- What are their thoughts on successful installations of telepresence?
- Who are the current users of telepresence?
- What are their thoughts on the benefits and drawbacks of their installations?
- Where can you turn to get assistance on next steps?

Then, when the seminar is over, you can head on down to the IMCCA-presented HD and Telepresence Showcase and look at some of the systems that were discussed in action – right on the InfoComm show floor.

What can you win at Telepresence@InfoComm?

Attendees of Telepresence@InfoComm are eligible to win one of two complete video conferencing systems being provided by Polycom and Tandberg. One drawing will take place for those present in the first half hour of the event, and the second drawing will take place for those present in the last half hour. These are brand new, high quality systems valued in the many thousands of dollars. Don't miss this chance to fly-home the proud owner of the latest in high definition conferencing technology. It may be the best odds you'll get in all of Las Vegas!

Come join us!

Come join us for a one day intensive program of presentations, demonstrations, Q&A, refreshments, valuable prize giveaways and

networking. To attend the event, go to www.infocommshow.org and register for InfoComm 08, then select the IMCCA educational event "Telepresence@InfoComm." For more information about the event and sponsorship opportunities contact IMCCA Executive Director Carol Zelkin at czelkin@imcca.org.

IMCCA Mission Statement

The IMCCA is a non-profit industry association resolved to strengthen and grow the overall conferencing and collaboration market by providing impartial information and education about people-to-people communication and collaboration technology and applications. Founded in 1998, the IMCCA membership is open to end users, vendors and other interested professionals who wish to share their disciplines and knowledge for the benefit of members and the interested general public. The IMCCA offers an open and interactive environment for these activities, including participation in trade shows and industry events and the IMCCA website. ■



Collaboration Is Today's Competitive Weapon

Francesca Jones is Marketing Manager at Sony Video Conferencing Solutions

Whilst freight and cargo were traditionally the commercial drivers for companies and international trade, today's business world increasingly revolves around an exchange of ideas and services. Irrelevant of size, only those organisations which have invested in tools for collective learning and a communications infrastructure that supports fast decision making will be agile enough to compete globally.

Despite the near-universality of IP networks in modern business environments, many companies do not yet realise how easy it is to maximise the benefits of their existing IT infrastructure through integrated visual communication and collaboration technologies. Since IP network infrastructure is so widespread, businesses can focus on generating economies of scale from it and concentrate on the human, economic and strategic return on investment benefits technologies like videoconferencing and telepresence offer.

Bridging cultural differences at Capgemini

Capgemini is a global market leader in consulting, technology, outsourcing and local professional services. Headquartered in Paris, the company employs more than 70,000 people and has regional offices in North America, Europe and the Pacific area. The head office in Holland is in Papendorp, Utrecht and its Belgian head office is in Diegem, near Brussels. Capgemini is able to combine market expertise with business and technological expertise, and serves diverse markets such as the consumer market, the energy market, the hi-tech market, the financial market, the telecom market and public authorities.

Within Capgemini, local front offices work together successfully for different projects with a back office located in India. Capgemini India currently employs more than 15,000 people and it is expected that this number will rise. To promote the cooperation between the front office and the back office, Capgemini was looking for an advanced videoconferencing system that would give physically separated teams the feeling that they were in one and the same room ("telepresence").

The human aspect is key in telepresence. In order to understand and

bridge cultural differences as much as possible, it is important for individuals who are separated physically to be able to exchange both verbal and non-verbal communication signals. In addition to promoting collaboration between the front office and the back office, Capgemini was also looking for a way to find customers to work together with India. Partly by bringing India closer to its customers via an advanced videoconferencing system, Capgemini was hoping they could show them how capable their Indian employees were. "Here too, the human aspect is again important," says Capgemini's Peter-Paul Tonen. "We would like our customers to realise for themselves that there are real people and colleagues on the other side of the world."

Capgemini found its solution with Teleportel and christened it the "cPort". "Compared to an ordinary videoconferencing system, our product enables users to look at each other directly eye-to-eye. What's more, we can work with life-sized images in 3D that increases the feeling of physical presence," says Teleportel's Luc De Backer. To this end, Teleportel worked together with Sony, which supplied the videoconferencing equipment. Teleportel then used its expertise to build this into an advanced videoconferencing system that created the illusion of real presence. Luc De Backer explains why they opted for Sony: "We did speak to other providers, of course, but there is only one player on the market that offers such good value for money. What's more, Sony provides excellent support during and after sales, and has top specialists in their professional fields."

Capgemini's Peter-Paul is very happy with the results achieved. "The cPort has shown that the great distance between front office and back office doesn't impede human interaction — and achieved more personal communication, easily, quickly and inexpensively." Capgemini is registering good results, both in quantity and quality. The quantitative results are mainly to do with the number of flights between front office and back office, which has been reduced with the use of the cPort. The need for people to meet one another in person remains, but the cPort is often an excellent alternative to a second or third meeting. Thanks to the cPort, an informed decision on whether to change direction on a particular project can be made faster. Here again, human contact plays an important role in being





▶ able to make the correct assessment of the person on the other side of the world. There is also closer and more frequent collaboration between both countries thanks to the cPort.

Efficiency, performance, autonomy – videoconferencing reduces training costs and travel expenses for the Portuguese Immigration and Border Control Department by 75%

Like many of today's businesses, public sector organisations are increasingly looking to create an environment where decisions are made faster, and where ideas, knowledge, and inspiration can flow securely from colleague to colleague.

The Portuguese Immigration and Border Control Department (SEF) is a security department, attached to the Ministry of Home Affairs, which has administrative autonomy and forms part of the country's domestic security operation. The department's objectives are to control the movement of people at the borders as well as the residence and activities of foreign nationals in the country. Its job is to monitor and control border posts, including international areas of ports and airports. Besides performing these functions, the Portuguese Immigration and Border Control Department aims to provide effective management and communication of data relating to the Portuguese area of the National Schengen Information System (NSIS). Other information systems under the SEF's jurisdiction include those common to the member states of the European Union regarding controlling the movement of people, as well as the systems relating to Portugal's passport issue data base (BADEP).

The Portuguese Immigration and Border Control Department realised that it urgently needed to adopt a video-conferencing system capable of covering each one of the departments it deals with on a daily basis, including the regional offices. The main driver was a need to exchange information in real time, but without jeopardising data confidentiality. The SEF's main requirements were:

- To increase communication efficiency between all the offices by means of a multi-conferencing system
- To share thousands of files effectively and securely
- To guarantee integration between the information and communication systems of its offices, while ensuring the flexibility and scalability of both systems
- To allow for the possibility of managing communications and system usage times centrally.

Sony Professional Solutions Europe offers a global solution that combines the PCS-1P group systems and TL30 individual desktop systems with network infrastructure products from Radvision. Besides this, Sony has designed a complete solution that allows the SEF to control and manage all sections and users on a central basis. As well as guaranteeing information-sharing in real-time and an increase in

internal productivity, the Sony solution allows the SEF to access reports of all its communications, whenever it so wishes.

In order to implement its video-conferencing solution, Sony Professional Solutions Europe went into partnership with Datinfor, a Portuguese market-leading systems integrator with a strong public sector background. Determined to ensure that the whole solution implementation and optimisation process was completed quickly, Sony Professional Solutions Europe decided to draw up a virtual configuration for the entire installation of the videoconferencing systems and network infrastructure products in advance. As a result, the complete implementation and optimisation stage was carried out speedily and without delays. From ascertaining the SEF's needs and devising a tailored solution through to the centralised management and monitoring of the system, Sony fulfilled all of the SEF's requirements quickly, and the efficiency of the organisations' internal communications was immediately increased. The Sony solution currently incorporates the headquarters, regional offices and other departments and consulates, with a total of 37 units installed to date.

The rapid integration of the Sony solution with the existing information system, the easy management of the solution and the immediate increase in communication efficiency within the SEF, have had a significant impact on the running of the agency. The solution supports mobile video-conferencing whenever the customer needs it (via simple access to an IP line), and so it is possible to adapt the communication network without involving major investment. In this way, Sony Professional Solutions Europe has guaranteed not only that the whole solution may be mobile, but also that it may be managed on a central basis, making the Portuguese Immigration and Border Control Department self-sufficient in controlling and training all users. It is no wonder, therefore, that the Sony solution has rapidly become the main training tool used at the SEF.

It is clear that one-to-one or group videoconferencing and telepresence solutions help people to work together more effectively. After all, visual communication is perhaps the most natural form of communication as people typically process information faster and retain it more when ideas are shown rather than just told, especially when the subject is itself a visual idea.

In this way, videoconferencing creates an environment where informed decisions are made faster, as information can be shared across geographies. The result is stronger teamwork and a more focused purpose - and all without the need to travel. In addition to helping organisations achieve their ultimate goals of greater profitability and enhanced long-term value for all stakeholders, videoconferencing also helps an organisation reduce its carbon footprint. ■

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GENEVA ■ MAY 20, 21, 22, 2008

EBACE2008 Brings Together European Business Aviation Industry for Annual Three-Day Event in Geneva

Join the business aviation community at the 8th Annual European Business Aviation Convention & Exhibition (EBACE2008) – the premier event for the European business aviation community to find products and services from the world's top vendors – in Geneva, Switzerland from May 20 to 22.

The three-day event – jointly hosted each year by the European Business Aviation Association (EBAA), the leading association for business aviation in Europe, and the National Business Aviation Association (NBAA) – brings together business leaders, government officials, manufacturers, business aviation department personnel and nearly all those involved in business aviation.

Over 11,000 attendees are expected at the Geneva PALEXPO, where more than 350 exhibiting companies from around the world will offer side-by-side comparisons of their products and services, and more than 60 aircraft will be on display at nearby Geneva International Airport.

The event also will feature sessions led by industry experts discussing the most compelling issues facing business aviation in Europe and around the world. International regulatory officials, including those from the European Aviation Safety Agency (EASA) – on-site at EBACE2008 for the first time ever – Eurocontrol, European Commission and Federal Aviation Administration representatives will meet face to face with the companies that are using aviation to facilitate their business.

EBACE2008 agenda preview Safety Standdown/Europe

Join Bombardier, EBAA and NBAA at the second annual European safety program developed primarily for professionals in the business aviation community in Europe. Safety Standdown is an effort to provide critical information and training that is directly related to human performance. The workshop will take place on Monday, May 19 from 8:30 a.m. to 4:30 p.m. at the Crowne Plaza Hotel. Attendance at the Safety Standdown is free, but a separate registration is required. For more information or to register, visit www.safetystanddown.com.

IS-BAO workshop

The International Standard for Business Aircraft Operations (IS-BAO) is a set of industry best practices developed by the business aviation community to enhance the safety, security, efficiency and effectiveness of flight departments and on-demand charter operations. The IS-BAO Workshop is an opportunity for business aircraft operators to learn more about the program and share ideas with others who are implementing it. The workshop, moderated by Kathy Perfetti with the International Business Aviation Council, will take place in Hall 1 of the Geneva PALEXPO on Monday, May 19 from 8:30 a.m. to 4:30 p.m. The cost is \$400, and a separate registration is required. For more information, or to register, visit www.ibac.org.

EASA workshop – new operational rulemaking process

The EASA operations and licensing rulemaking process has been underway for almost two years and is now open for comment. This session is one in a series designed to brief the aviation community on the newly proposed rules and provide an opportunity for debate with regulators and decision-makers. The workshop, moderated by business aviation industry veteran Ray Rohr, will feature guest speakers Eric Sivel, deputy director of the rulemaking directorate for EASA, and Daniela Defossar, EASA operations officer. The event will take place in Hall 7 of the Geneva PALEXPO on Thursday, May 22 from 1:00 p.m. to 4:30 p.m.

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PRIVATE JETS

Private Jet Options Explained

David Macdonald is Director of Air Partner Private Jets, a division of the global private aviation company Air Partner plc

The private jet industry has been experiencing significant growth over the last 18 months, and it is clear that, for an increasing number of affluent users, the new experience of flying by private jet is the solution to today's traumatic scheduled service alternatives. As airlines become ever more price-focused, with ever lower fares being chased by ever lower service, so those who want to escape airport nightmares have switched to private jets, and probably will never return to using scheduled services.

As with all fast-growing industries, the established industry names are soon copied by a plethora of look-alikes, some young and professional, others weaker and vulnerable. New users keen to join the private jet club are now being seduced by a multitude of companies offering numerous different schemes that make direct comparison difficult. The spider's web is spun and the trap laid.

The simple buyer beware rule of 'caveat emptor' (if diligently followed) will provide a first level of protection, but buyers must know what they want and must quickly gain a thorough understanding of the subject before they sign on any dotted lines.

At this stage there are four fundamentals to be established:

- Try to strike a perfect match of your precise requirements with each possible solution.
- Weigh up the advantages and drawbacks of each scheme, to understand the significance of any compromise you may need to make.
- Investigate and fully appraise yourself of the contract terms and conditions.
- Be confident in the service and support levels being promised.

There are also four principal categories where your ideal solution might lie:

(1) Ad hoc charter

Using on-demand 'ad hoc' charter is one of the most economical and flexible methods of flying privately in the most appropriate aircraft

for a given need, from a private jet to a commercial airliner. Quite simply, the outlay is limited to a one-off flight payment according to the size and type of aircraft used, distance involved, and duration of trip. A good analogy is that of a chauffeur-driven car service: the route is fixed, the rate is fixed, a uniformed driver presents an immaculate car, and the commitment ends at the destination. Prices and availability are guaranteed once a booking has been made.

The number of aircraft charter companies is growing in line with globalisation and demand for private flying but beware that levels of service and experience can vary tremendously. Charter providers are either aircraft operators or brokers; in both cases, look for long-term and well-established names as potential suppliers, and avoid being seduced by web-page promises that lack substance. If you fully understand the market, successful direct buying is possible. However, many choose to use a reliable broker, given the ever-changing nature of the market week on week. Some brokers use a selected network of operators with whom they have a close business relationship; others use a greater pool of aircraft and judge safety capabilities and fleet quality on certification assurances or ratings from third parties. The fact that anyone can easily and quickly set up a brokerage is in itself a warning sign and it is wise to make sure the broker being used is independent, has a proven track record of success and safety, and has widespread global experience.

Ad hoc charter is ideal for those who wish to avoid commitment beyond the short term, or for those who have ever-changing needs.

(2) Jetcard membership programmes

Jetcards are an extremely popular, recent addition to the private aviation mix and particularly appeal to those who make several short trips during the year. Jetcard clients prepay for a set number of flight hours (typically between 25 and 50) in their chosen category of aircraft which can range from light and midsize cabin jets capable of carrying six or seven passengers to large cabin and global cabin jets with capacity for 10 to 14 people. Another option is a card specific to one aircraft model. Additional hours can be purchased if required and the upgrading or downgrading of aircraft types is usually an ▶▶





- ▶ option. Only occupied flight hours are deducted from card balances; charges are not levied for aircraft positioning. While availability and access to aircraft are guaranteed, an important factor when choosing a jetcard provider is to read the small print very carefully for hidden extras and conditions.

What to look out for? Clear transparent pricing, no peak-time supplements or restrictions, no fuel surcharges, discounts for return trips and the option to cancel with a full refund of unused hours. For the environmentally conscious, some programmes now offer carbon-neutral offset options. Jetcards offer a simple solution for those people who wish to negotiate the cost of their private jet flying annually and strike a deal with one single supplier which affords a consistent level of service and support.

(3) Fractional ownership

Having originated in the US, fractional ownership is now also popular with some European jet users, although the appeal has diminished somewhat since the arrival of jetcards. Fractional schemes require a high degree of commitment. Customers buy an up-front ownership share in an aircraft pro-rated according to its market price and then pay monthly management fees for maintenance and crew. Additional charges are made for the flight hours flown and 'extras' could include fuel surcharges. Shares tend to start at 1/16 of the aircraft for about 50 flight hours a year and are purchased for a fixed term (usually five years) before being sold back at market value, less a remarketing fee. Upgrades or downgrades are sometimes permitted across a participating company's fractional fleet, and short-notice aircraft availability is guaranteed. Selecting an aircraft usually depends on two factors – passenger capacity and aircraft range; the larger the capacity and the longer the range, the higher the capital fee and ongoing charges. Share costs are split in a linear fashion and can range from a few hundred thousand dollars to several million. Be mindful of the true exposure to depreciation of the capital cost and a long-term contract without exit options. Talk to satisfied clients or visit websites like www.fractionalinsider.com for an independent view.

(4) Outright ownership

High-net-worth individuals, corporations and senior executives often purchase their own jet for the total flexibility this affords. Whereas a minimum investment of \$2.5 million is needed to acquire even a light cabin jet, those with long-range capabilities can cost as much as \$50

million, before the annual cost of employing crew, undertaking maintenance and the actual operating costs incurred in flight. Such fixed costs of operation can be significantly reduced by contracting out spare hours through a private aircraft management company with a proven track record. If the aircraft is undergoing maintenance or is inappropriate for a flight due to range or charter passenger capacity, then a good management company will provide alternative options for owners to meet their varied needs.

Be in no doubt, this industry is providing the ultimate flight experience for the discerning new clients pouring into it. Satisfaction levels are very high, and new users soon become addicted to the lifestyle. Underneath that success lie the wrecks of undelivered promises, lost capital, and nightmare stories of the few who ventured in without care. Such victims paid a very high price.

So, in summary, three further rules should apply when considering buying into private flying:

- Deal with a supplier that has been fully researched and that inspires your confidence.
- Fully understand the financial implications of any commitment you make.
- Read the small print – thoroughly.

All private flying options are viable and some frequent flyers use more than one approach. Of the four categories on offer, there is no easy ready reckoner giving instant answers as to which is best. Every situation and every scenario is different. There is more to flying by private jet than simply calculating the hourly usage involved and any indications to the contrary are grossly oversimplifying the issue.

Air Partner Private Jets is a world leading specialist supplier of a wide range of private jet products – JetCards, ad hoc charter and private jet management, maintenance and sales – and operates Europe's largest fleet of modern Learjets out of London Biggin Hill airport. The London Gatwick-based Air Partner Group has 23 offices in key business centres spanning Europe, North America, the Middle East and Asia and holds the aviation industry's only Royal Warrant as Supplier of Aircraft Charter to Her Majesty Queen Elizabeth II. The company has been trading for almost 50 years, operates 24/7 every day of the year, is listed on the London Stock Exchange and provides aviation solutions for corporates, governments and individuals. www.airpartner.com. ■

XBRL - Increase Transparency in the Financial Markets

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Economies world-wide seeking to become highly competitive and dynamic in a knowledge-based world need a well functioning capital market. Capital markets play an important role in lifting economic growth and spurring job creation, and hence raising standards of living.

Fundamental to high functioning capital markets are financial reports prepared by management and audited by accountants. These reports provide the primary source of independently verified information to capital markets about the performance of the companies and they facilitate capital allocation decisions. Information contained within these financial statements helps users identify and evaluate investment opportunities and can lower cost of capital as the reliability of financial information increases.

Transparency, or the ability of users to quickly find and understand financial information, is a cornerstone to effectively informing the financial markets about corporate performance.

Financial reporting must focus on information that is reliable and meaningful and more importantly provided in an information format that is timely and reusable. A new emerging open source information standard called eXtensible Business Reporting Language (XBRL) is about to revolutionize financial and business reporting forever by delivering business reports that increase transparency, speed, and increase reporting accuracy.

Why you should get serious about XBRL

XBRL does not force any changes in the way companies manage their businesses. It is not a new accounting standard. Rather, it is simply an emerging information format for financial and business data. It makes company information more accurate, more transparent, and faster to aggregate and report. It makes data easier to analyze. And, for the first time, it allows computers to identify and analyze corporate financial data automatically and in real-time.

This is the revolutionary historic achievement. Unlike the many electronic advances that have vastly increased the volumes of data, XBRL vastly increases the clarity of data. XBRL data is the most accurate and timely in the marketplace with the lowest error rate of any available dataset. The main reason for this claim is that preparers of XBRL reports directly influence how the data will be made ready for consumption by the capital markets. XBRL eliminates error prone data re-entry and distorted data aggregations.

The name of this reporting language gives some people the idea that XBRL is all about technical computer software. XBRL does not require technical expertise to use it — any more than you need to be a computer programmer in order to browse the internet. A better name for XBRL is the one adopted by the US Securities and Exchange Chairman Christopher Cox. He calls it “interactive data” and promotes it as the future of financial reporting. In fact, one of XBRL’s biggest supporters is Chairman Cox, who has said that the real reason behind SEC’s interest in interactive data was “to protect investors” and to ensure that markets function best when “all the information that market participants need is available to them when they want it, and in a form they can use.” XBRL has the ability to help shift the power back to the individual investor by empowering companies to more efficiently disseminate their financial information to the end user in a reliable, accurate and consumable way.

Think of XBRL as similar to the supply chain standard referred to as the UPC code. XBRL has been called the bar coding for financial statements giving the same efficiency that the UPC code gives to

packaged goods. The UPC code links products to underlying data about quantity, shipment dates, prices and more. With XBRL, every piece of coded financial data is also linked to explanatory information. You don’t just get numbers; you get context. The underlying information of XBRL reveals facts about the data such as the accounting period, where the data appears in a financial statement, and links to data definitions and authoritative accounting literature. XBRL is a universal language, adaptable to any nation’s accounting standards and requirements. Countries in all five continents have adopted XBRL.

One of the barriers to adoption of XBRL is the perception on the part of financial and information technology corporate leaders that XBRL is only about technology.

For those of you who still view XBRL as simply technology, we have one question: do you look at HTML as technology or do you look at it as a must-have solution for communicating financial and business reporting information to the ever-growing networked world? The point is that with XBRL, companies can quickly expand the opportunities to tell their story quickly and accurately in the new interactive data era.

Today, most of us probably do not even think about HTML as the underlying solution that enables management to communicate to the right stakeholders. Fact: getting the right information to the right stakeholders at the right time is the common internet standard called HTML. It allows you to control how the stakeholders view information when they launch their internet browser. However, HTML has its limitations: the code is only useful as a means of marking up a web page to look good to humans. Computers cannot further process or understand the displayed data in the HTML format. Computers can understand data once it is tagged to XBRL taxonomies (ie. barcodes). This is because each XBRL tag carries with it additional accounting information that eliminates the guesswork that normally surrounds a piece of reported financial data.

The enormous advantages of universally accepted labels:

- *Every piece of reported data is identified and explained.*
- *Financial analysis can be automated: datasets can be instantly and accurately identified and processed by financial software.*
- *The labels are multilingual: they work regardless of language.*
- *They are international: they work with different accounting standards.*
- *They adapt to meet different requirements and uses.*

For example, if you looked at a revenue number on a typical corporate website, you would have to read the column headings and row identifiers to determine the period, the precision on the amount reported and what account title the company has assigned to that number. Additionally, the revenue recognition footnote accompanying the financial statements adds additional information about the number. With XBRL, companies can provide additional data definitions, authoritative literature references and more thereby dramatically increasing the probability that the user of the financial data will be able to understand management’s intent.

The Microsoft Corporation is one of the world leaders in the use of XBRL. The Microsoft Investor Central website, <http://www.microsoft.com/msft/IC/default.aspx>, contains many interactive features all driven by tagged XBRL data. It is a great ▶▶

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- ▶ example of the power of XBRL without asking the user to know anything about the technology.

whole new electronic marketplace for financial and business reporting information.

Spreading globally

Every Chinese public company reports their financials in XBRL to the Shanghai and Shenzhen stock exchanges; other live projects are starting in Sweden, Denmark, Japan, Belgium, India, the UK and Spain to name a few. That raises the question, "Can the capital market afford to sit back and let all these other countries bring dynamic interactive intelligent XBRL data to the marketplace?" Many studies reveal that capital flows where there is transparency and trust. Providing your business reporting data in XBRL gives birth to a

Clearly the way financial and business reporting data is prepared, communicated and analyzed is fundamentally changing. XBRL is not about the technology. It is about communicating your financial and business reporting information, accurately, effectively and in real time, to the electronic marketplace. Give the capital markets better financial information that is easier to consume, is more reliable, and is delivered faster, and the capital market will respond favourably with more exposure and lower costs of capital. ■

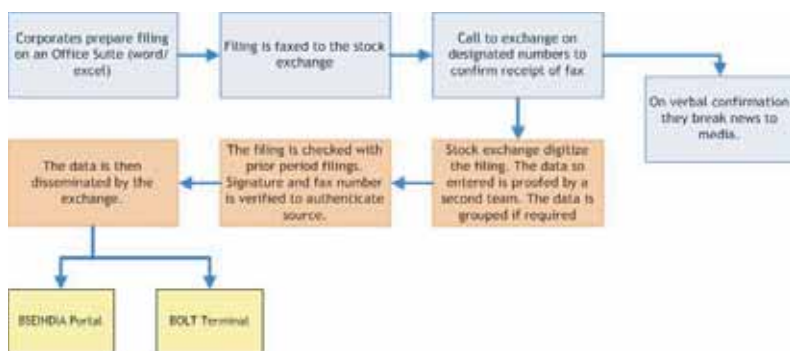
The Bombay Stock Exchange Approach to XBRL

Bombay Stock Exchange (BSE) has for example have started mandating that XBRL be the underlying information standard for all 6,000 of their listed companies. The Bombay Stock Exchange used a local vendor IRIS to help them build their XBRL solution.

The reporting requirement before XBRL was a manual process requiring companies to send a "Fax" to the exchange. The Fax was then forwarded to the "Data Digitizing Team" which then types the data into a terminal based form. The data is then checked by a second team. On approval by the second team the data is then pushed onto the BSE's website and onto trading terminals for public dissemination. (see graph 1)

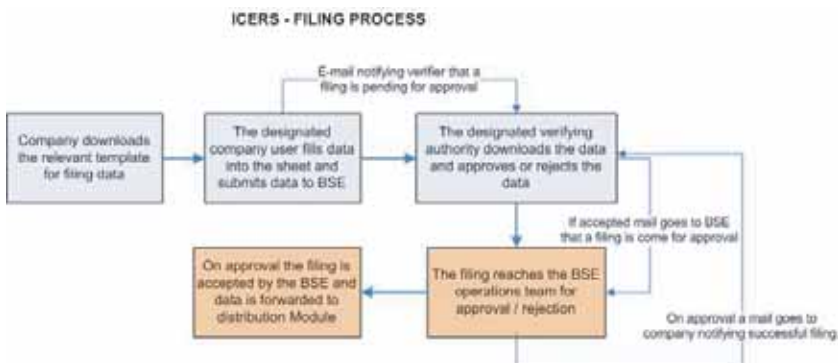
The companies first call the exchange to confirm if the exchange has received the fax. Only after the filing actually appears on the stock exchange portal does the management of the company speak to media.

Graph 1:



Due to the rapidly growing Indian markets this procedure of information collection and dissemination had serious disadvantages. Not only is it prone to human errors caused by manually rekeying of the information intervention, but also results in the smaller companies not getting the attention of the analysts as the companies having a larger market capital.

Hence there emerged a need for a system that would automate the entire process of companies filing information with BSE at the same time not compromising on the security and accuracy of the information being filed. This resulted in the formulation of ICERS (Indian Corporate Electronic Reporting System). The new system is automated reduced both the cost of compliance to the companies as well as disseminated timely reusable information to the market place.



Benefits of XBRL filing systems for stock exchanges are:

1. Automated

The system has eradicated the need for manual intervention while handling the data at BSE end. Yet each piece of information filed by the corporate can be grouped and tagged onto various reports effortlessly. Allowing every company equal opportunity to declare their information to the investors through the BSE website.

2. Increased accuracy

Decrease in manual intervention leads to increase in accuracy no doubt as the only people dealing with the data manually are the creators of the data, further reducing the probability of the error.

3. Easy to use

The client end is MS - Excel which is an inherent part of every individual's desktop.

4. Flexible

The system is built on an extremely dynamic database, which can accommodate various formats filed in by individual companies. Any change reporting requirement changes can be incorporated within minutes without requiring any updates on the client end. ■

A Case Study on the Implementation of XBRL for Research & Analysis

Wilson So is the Director of Hitachi America Ltd, XBRL Business Unit

PricewaterhouseCoopers (PwC) is one of the world's largest accounting and business services firms. In an effort to better share synergies across lines of business, PwC wanted to develop a platform that serves the needs of its Audit and Advisory groups on research, analysis, and reporting. The platform was given the name iDP (interactive Data Platform) and the system would draw data from a multitude of data sources and be deployed across lines of business as a shared service. As is typically with all large corporations, PwC sees the existence of silos across its lines of business. There are duplication of data sources and effort throughout the company. To kick off the project, PwC initially only targeted a single data source which was an existing third-party financial data source PwC subscribed to from an outside vendor. Hitachi America, Ltd XBRL Business Unit was hired as the system integrator for this project.

This was followed by adding other relevant data feeds. Ultimately, it is expected to include its own internal proprietary client information through trial balance roll-up, complete data inter-operability with other XBRL data sources such as outside regulatory data. Hitachi works closely with the iDP team from PwC to hash out the requirements during each stage and deliver the solution in a phased approach.

Besides reducing the inventory of duplicative data sources and thus achieving a huge saving in annual data subscription fees, another driver is to streamline the workflow of serious analysts and casual data users alike.

PwC analysts were spending an enormous amount of time on the unproductive tasks of data retrieval and error correction. Although the analysts had an existing inventory of analytic models previously developed in Microsoft Excel, they had to copy and paste data from the data source to use them. PwC wanted to slash the time spent on such routine busy work so that analysts could focus on the comparative analyses, benchmarking reports, and custom analyses essential to its business. The answer to the above is to automate the data retrieval process to remove this mundane task as well as to reduce human errors.

iDP is a platform built on open standards – XBRL (eXtensible Business Reporting Language) and Web Services. The use of Web Services allows iDP to connect to and interoperate with PwC's existing system infrastructure. XBRL is chosen as the data format for representing financial numbers when analysts perform their work. The project started with the financial data of some forty three thousand (43,000) US and non-US public companies stored in its native format inside a relational database. When an analyst wants to retrieve a certain company's data and compare it to its peers' or to an industry sector average, he or she makes the request inside Xinba®.

Xinba® is an Excel add-in developed by Hitachi for consuming and analyzing XBRL data. A specially-developed Xinba® iDP plug-in for PwC provides an interface to input target ticker symbol(s), fiscal year(s) and other specific information to help speed analysis. The XBRL metadata information associated with each financial number is preserved after consumption by Xinba®; the analysis capability is supplied by Excel with its built-in functions within the context of Xinba® templates. Xinba® templates offer the flexibility to build new or modify pre-existing analysis models in Excel worksheets to accept XBRL data.

The data request is then sent via Web Services to the HDC (Hitachi Data Converter) which retrieves the financial data from the relational database in XML format and converts it to XBRL. Both the latest US-GAAP (Generally Acceptable Accounting Principles) and IFRS (International Financial Reporting Standard) taxonomies are supported. The financial data of both US and non-US companies, on an annual and quarterly basis, is thus made available in the XBRL 2.1-compliant format, and offered for research, analysis, and reporting in a real-time basis. The HDC also performs validation on the data for error checking purpose. The HDC is developed using one of Hitachi's two common library products of XBRL parsing APIs called HBRP (Hitachi Business Reporting Processor); the other one being XiRUTE Library for .NET.

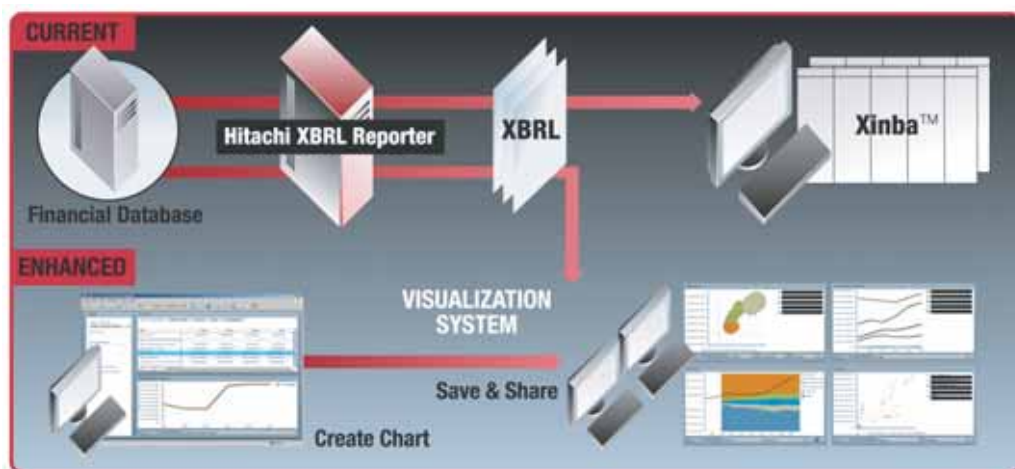
As a result of the automation, no cutting and pasting by the analysts is required. This saves an enormous amount of time on the part of the analysts. Human errors are also minimized.

In order to mine more information from the financial data, a visualization feature was next added to iDP. PwC needed a tool that:

- allowed analysts to visualize XBRL financial data in their preferred style and,
- shared the visualization results with other analysts.

The application uses HBRP and Adobe Flex™ to draw interactive charts.

The architecture of HDC and the visualization component is shown below.



The achievements of the project have been substantial. The first phase of the new system, completed in July 2006, has dramatically reduced the time required to prepare financial data for analysis – from one day to less than one minute to compile data for five companies spanning ten (10) years.

The cost saving is equally impressive which includes a three million dollar (\$3m) 3rd party data saving and an annual ten million dollar (\$10M) business process cost saving.

In summary, the deployment of iDP has brought on the benefit of streamlining the workflow, thus enabling the analysts to spend their time more productively and charge more billable hours. In addition, the sharing of data and removing silos across lines of business have resulted in significant cost saving by getting rid of duplicative data sources. ■

Ernst & Young's Global Transfer Pricing Survey – Transfer Pricing Documentation and Controversy Risk Management Practices

Oliver Wehnert, Transfer Pricing Partner at Ernst & Young AG Düsseldorf, Germany, presents in extracts findings of Ernst & Young's *Global Transfer Pricing Survey 2007/2008*

In December 2007, Ernst & Young published its 2007/2008 Survey, having once again commissioned Consensus Research International, London, to carry out the study. The report summarises the transfer pricing practice, perceptions, and audit experience of MNEs' tax departments. It also provides insights into how they are dealing with economic, regulatory, and fiscal changes taking place around the world.

The latest study surveyed some 850 MNEs across 24 countries. Of the 850 MNEs, 655 were parent companies interviewed from the MNE headquarters perspective and 195 were inbound subsidiaries interviewed from the local operating company perspective.

Global legislative and enforcement trends in transfer pricing

The degree of transparency in MNEs' tax and transfer pricing positions, largely driven by developments in financial and tax disclosure requirements, has dramatically increased in recent years. Both accounting and tax regulators have intensified the burden on MNEs to actively report and justify the impact of their tax planning. Recent examples include the FASB's June 2006 issuance of FIN 48, which mandates a framework for recognizing, measuring, and disclosing tax positions in US GAAP financial statements, and the IRS's introduction of Schedule M-3, which requires reconciliation of book-tax differences.

New multilateral initiatives – on the other side - focused on cross-border enforcement, particularly as it applies to underreported income, show that tax authorities no longer take a parochial view of administration but are becoming more inclined to consider global consequences. For example, in September 2006, the 39 member countries that compose the OECD's Forum for Tax Administration adopted the "Seoul Declaration". The Seoul Declaration commits the member countries to cross-border information sharing and improved "practical cooperation" to counter non-compliance.

In 1995 Ernst & Young launched the first in a series of biennial surveys interviewing multinational enterprises (MNEs) on international tax matters. Entitled the *Global Transfer Pricing Survey*, a core focus of the research is a topic that continues to be the number one international tax issue of interest to MNEs – transfer pricing. The scope of the research into transfer pricing reflects the growing number of countries that have increased their transfer pricing regulation and enforcement, and reveals also the diversity of transfer pricing issues facing MNEs.

The enhanced disclosure requirements, along with the trend toward tax authority collaboration and information exchange, are putting tax departments under increased pressure to manage transfer pricing risks with greater precision.¹

Risk mitigation is a key priority

Sixty-five percent of the surveyed parent respondents believe transfer pricing is more important now than it was two years ago (fewer than 1% say it is less important). The 2007 Survey also shows that MNEs' priorities for preparing documentation are changing. In our 2005 Survey, "consistency of documentation" was the top priority in preparing transfer pricing documentation. In our 2007 Survey, consistency was displaced by "risk mitigation or reduction" as the top priority.

While priorities for preparing transfer pricing documentation are shifting, actual approaches to preparing it have remained largely unchanged. One-third of respondents prepare documentation concurrently on a globally coordinated basis. The same number said that they prepared documentation on a country-by-country basis, with little coordination. The 2007 Survey results on documentation

approaches are nearly identical to those of the 2005 Survey and are only marginally different from those of the 2001 Survey, where 32% took a globally coordinated approach and 37% a country-specific approach. These results suggest that multilateral initiatives intended to harmonize documentation approaches and ease taxpayer burdens, such as those supported by the EU Joint Transfer Pricing Forum and the Pacific Association of Tax Administrators, are having little, if any, effect on tax payers' documentation practices.

Approaches to comparable analyses

There has been significant debate over recent years regarding the use of pan-regional comparable sets. Specifically, different opinions exist as to whether country-specific comparable sets yield meaningfully different results from pan-regional comparable sets. The European Commission has recently adopted a Code of Conduct that calls for a pan-European master-file approach to documentation and has published a white paper on the use of pan-regional comparables sets, indicating that they should be accepted across Europe.

A pan-regional approach to documentation and comparables analysis could potentially lead to significant cost savings for taxpayers, while also eliminating incompatible compliance burdens. There appears to be a general reluctance among taxpayers, however, to take on global or regional approaches to their transfer pricing compliance.

The 2007 Survey results show that 38% of parent respondents opt for local comparables searches for all countries, while only 27% rely on pan-regional sets. Even within Europe, where the urge for a pan-regional approach is perhaps the strongest, most parent respondents (36%) rely solely or primarily on local comparables sets.

The general reluctance to use pan-regional approaches is perhaps explained by several factors. Many taxpayers, for example, are more comfortable disclosing only what is absolutely necessary to local tax inspectors. Pan-regionally focused documentation and comparable sets necessarily involve disclosure of operational and tax information related to operations outside the local jurisdiction. Audit experience also suggests that pan-regional approaches may not be well-embraced by tax authorities either. The most common reason given by parent companies for their transfer pricing documentation being rejected on audit is that the economic analysis was not accepted. Moreover, 26% of parent respondents indicated that they had to perform additional analysis to identify local comparables during their transfer pricing audits. By adopting a locally focused approach at the outset, many taxpayers likely believe there is less risk of disputes with tax authorities.

Transfer pricing methods

In managing transfer pricing risks, it is helpful to have a general sense of the transfer pricing methods commonly applied by other taxpayers for the various types of transactions. For benchmarking intercompany services, for example, the cost-plus method is the most commonly used method, not surprisingly. The CUP/CUT method remains the most popular method both for financing and intangible property transactions. The popularity of the CUP/CUT method for intercompany financing transactions is perhaps explained by the availability of data regarding what are largely commoditized transactions. However, the inherent uniqueness of intangible property raises the questions as to whether, in practice, taxpayers are adhering to the fairly strict comparability criteria associated with qualifying intellectual property transactions as CUPs/CUTs.²

Controversy management

After exhausting the domestic appeals procedures, taxpayers generally have three alternatives when it comes to managing and resolving transfer pricing disputes with the tax authorities. These are ►►



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The Survey shows that twenty-one percent of parent respondents have used an APA as a controversy management tool and, since 2003, 17% have referred a transfer pricing matter to Competent Authority and only 4% have litigated a transfer pricing issue.

APAs

Countries worldwide have increased their investment in the APA process in recent years, which appears to be reflected in the 2007 Survey results. Despite the increasing number of taxpayers applying for APAs, the time taken from submission to approval has decreased significantly since 2005. Fifty-one percent of parent respondents who applied for unilateral APAs, for example, said the process was complete within 12 months. In our 2005 Survey, only 32% of parent respondents completed their unilateral APAs within 12 months. With respect to bilateral APAs, only half about the number of respondents said the process took more than three years than it did in the 2005 Survey (11% compared to 21%, respectively).

The number of countries in which MNEs seek APAs is growing as well. Parent respondents collectively named 28 different countries in which they have some form of APA, which is up from 23 in 2005 and 13 in 2003. The US, UK, and Australia have remained the top three most popular jurisdictions for MNEs to conclude APAs with since our 2003 Survey.

Seventy-eight percent of parents reported that they were generally satisfied with the APA process. However, many remain unconvinced (or unaware) of the benefits of APAs, with fewer than half (47%) of

parent respondents not currently using APAs saying they would consider doing so in the future.

Competent authority

Globally, there appears to be a moderate trend for both parent and subsidiary respondents to rely less on the Competent Authority process. This may be a result of the increased availability of APAs and perhaps a general desire by taxpayers to manage controversy risks prospectively as a means to achieving financial statement certainty. Despite the slight decline in the use of the Competent Authority process, it is the clear preferred method among parent respondents for resolving their transfer pricing disputes.

As with APAs, resolution times for Competent Authority cases have generally decreased, which may also be reflective of increased investments and improved procedures on the part of tax authorities. The number of parent respondents reporting that the process took fewer than 12 months increased to 38% from 21% in our previous survey. The number of cases taking longer than three years to resolve has fallen from 28% in 2005 to 13% in 2007.

Litigation

Overall, taxpayers have very limited experience with transfer pricing litigation. Only 28 instances of litigation (since 2003) were reported by the 850 respondents included in the 2007 Survey. Of the few cases reported, however, a disproportionate number occurred in Germany and Canada, with each having five cases reported (collectively accounting for 36% of the total).³

Fewer than half (43%) of those having experience with litigation indicated they were satisfied with the process, which is considerably lower than the satisfaction level for APAs or Competent Authority. ■

1. Ernst & Young, *Global Transfer Pricing Survey 2007/2008*, p. 3

2. Ernst & Young, *Global Transfer Pricing Survey 2007/2008*, p. 15-16

3. Ernst & Young, *Global Transfer Pricing Survey 2007/2008*, p. 17-18

Success of Specialised Investment Funds in Luxembourg

Thibaut Partsch and Valérie Mantot are with Loyens & Loeff Luxembourg

It has now been a year that Luxembourg has created a new investments structure by the law of 13 February 2007 on specialised investment funds (the SIF Law). Luxembourg had already organised institutional funds under the law of 19 July 1991 (the 1991 Law), but thought it was about time to improve its efficiency. It has therefore reinvented a regime on the basis of some provisions governing traditional undertakings for collective investment governed by the law of 20 December 2002 (the 2002 Law) and the legal and regulatory regime applicable to investment companies in risk capital governed by the law of 15 June 2004. This has resulted in a lightly regulated, operationally flexible and fiscally efficient multipurpose investment fund regime for an international qualified investor base.

Success of this structure has been huge so far since 416 of these funds (SIF) have been established in Luxembourg, in addition to the 222 already existing under the 1991 Law, which were automatically converted as SIFs. This article will briefly review the main reasons of this success.

Qualified investors and promotion

While subscription of units and initiation of institutional funds was formerly limited to institutional investors, the basis of permissible investors in SIFs has been broadened to encompass people that are considered as sufficiently well-informed. Following on the evolution of the European directives and regulation, the Luxembourg legislator has considered that the following investors would be able to invest in and initiate SIFs :

1. investors who invest at least EUR 125,000 or,
2. for those investing less than this amount, the investors who have received an appraisal from a credit institution within the meaning of Directive 2006/48/EC, an investment enterprise within the meaning of Directive 2004/39/EC, or a management company within the meaning of Directive 2001/107/EC, certifying the investor's expertise, experience and knowledge in adequately appraising an investment in the relevant SIF.

There is no requirement that a promoter be appointed for the setting-up of the SIF. The existence of a promoter, which typically needs to evidence prior to the establishment of a fund, sufficient reputation, knowledge and financial means to be able to indemnify the investors in certain instances of default of the fund, was seen as a significant entry-level hurdle for smaller highly specialised investment management professionals or organisations. Such requirement is however not necessary for the protection of well-informed investors, and therefore does not need to be met for SIFs.

Supervision

Setting up a SIF does not require the prior authorisation of the Luxembourg regulatory authority of the financial sector (Commission de Surveillance du Secteur Financier (CSSF)). The constitutional documents for the relevant SIF need to be filed with the CSSF within the month following the establishment of the SIF. The CSSF will then verify the compliance by the SIF and its directors with applicable laws and regulations prior to admitting the fund to the official SIF list, although the SIF may start its activities as soon as it is established.

Custodian

The assets of the SIF have to be safeguarded by a Luxembourg established custodian bank. This custodian is responsible towards the investors for the supervision of the assets, but does not need to fulfil all the additional monitoring duties generally imposed to custodian in relation to certain operations of other types of funds. This results in fewer constraints for the organisation of the relationship between the SIF and its custodian bank.

Management

The CSSF will devote special attention to reviewing the qualification of the directors (dirigeants) of the SIF. The legal representatives of each SIF need to submit proof of their professional qualification, good standing and honourability to manage the SIF. The directors will not be subject to any residency requirement. In practice, the appraisal of the CSSF will consider the qualifications of the management team in its entirety. ▶▶



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► Investment and leverage

The absence of preset or regulatory investment restrictions represents another important step towards a flexible fund regime. Although the principle of risk spreading still applies, there are no preset quantitative, qualitative or other investment restrictions.

The SIFs initiator(s) may freely determine their investment policies (eg, within a single or multi-compartment SIF - a so called "umbrella fund"), investment restrictions or limitations provided the investment policies are based on the principle of risk spreading.

The CSSF Circular 07/309 of 3 August 2007 provides the following guidelines on the interpretation of the risk-spreading principle:

1. A SIF may not invest more than 30% of its assets or commitments to subscribe securities of the same type issued by the same issuer. This does not apply if the SIF invests in undertakings for collective investments that are subject to risk-spreading requirements at least comparable to those applicable to SIFs.
2. Short sales may not in principle result in the SIF holding a short position in securities of the same type issued by the same issuer representing more than 30% of its assets.
3. When using financial derivative instruments, the SIF must ensure, via appropriate diversification of the underlying assets, a similar level of risk-spreading. Similarly, the counterparty risk in an OTC transaction must, where applicable, be limited having regard to the quality and qualification of the counterparty.

The CSSF may grant exemptions, on a case by case basis, to the application of these guidelines.

SIFs are furthermore not bound by any other borrowing restrictions than those decided in their constitutional documents.

Disclosure and reporting

Each SIF needs to prepare an "issuing document", which may be labelled as a private placement memorandum or an offering memorandum, as the case may be. Even though no minimum content is generally prescribed, for so long as no Prospectus Directive compliant prospectus is to be prepared, such document must include any information necessary for the investors to make an investment decision, including information on the risks associated with the investment.

A SIF only needs to produce an annual report following a preset reporting template providing for a minimum level of disclosure. This annual report has to be provided to investors and the CSSF within six months from the end of the period to which it relates.

A SIF is not obliged to publish or disclose its net asset value.

Structuring and capitalisation

SIFs may be structured in several ways:

- as a common fund governed by a contractual arrangement (ie, a fonds commun de placement (FCP) managed by a management company). These structures are unincorporated pools of assets that are normally only available to investment funds regulated by the more stringent 2002 Law;
- as an investment company with variable capital (ie, a SICAV) opting for the corporate form of a private limited liability company (société à responsabilité limitée (S.à r.l.)), public limited liability company (société anonyme (SA)), partnership limited by shares (société en commandite par actions (SCA)) or cooperative company in the form of a public limited liability company (société coopérative sous forme de société anonyme (SCSA)). The advantage of this structure is that, even though it is a company with limited liability, it provides an important flexibility for the increase and decrease of capital, such modifications being made by the board of directors of the SIF, without the need to gather a general meeting of shareholders and without giving existing shareholders a preference right on capital increase; or
- as any other legal entity available under Luxembourg law, such as a limited partnership (société en commandite simple (SCS)),

for example. A SIF launched in the form of a limited partnership may replicate the operational and legal flexibility typically associated with Anglo-Saxon partnerships.

Depending on the choice of vehicle, there may be a high degree of structuring flexibility. Moreover, the initiators of SIFs may benefit from all the flexibility they require for the organisation of the capital (variable or fixed capital), the subscriptions, redemptions and distributions, the valuations of assets or the compartmentalisation.

A SIF may also be structured as an umbrella fund. Although the umbrella SIF constitutes one single entity, there is a separation of assets and liabilities of the various compartments. Such possibility to create multi-compartment entities has attracted much interest from initiators since the inception of the regime.

The capital of the SIF (share capital and premium included) needs to reach at least EUR 1,250,000 within a period of one year following approval by the CSSF.

Marketing and distribution

SIFs are not subject to the provisions of Part I of the 2002 Law which transposes the UCITS Directive 85/611/EEC. Therefore, SIFs do not qualify as undertakings for collective investments in transferable securities (UCITS) and cannot benefit from the European passport regime which allows for the free marketing and distribution of UCITS throughout the European Union.

One additional limit to the marketing and distribution of SIFs is that investment in SIFs is reserved to "well-informed" investors only. Subsequently, SIFs cannot be publicly marketed and distributed neither in the European Union nor in foreign countries. SIFs may only be distributed by way of placement reserved to well-informed investors and must therefore comply with the specific marketing and distribution provisions applying to non-harmonised vehicles in each targeted country of distribution.

Notwithstanding the above, SIFs may be the object of a listing on the Luxembourg Stock Exchange, which is a regulated market within the meaning of Article 47 of the Directive 2004/39/EC of the European Parliament and of the Council on the Markets in Financial Instruments, or on the Euro MTF market.

Distribution of SIFs' securities through a listing in Luxembourg is possible provided that (i) the securities of the SIF are freely transferable, (ii) the SIF has published annual accounts for three consecutive financial years (safe for an exemption to apply), (iii) the SIF has floated a sufficient number of securities to allow the organisation of a proper market and (iv) appropriate mechanisms are established to ensure that the ownership of those securities is limited to well-informed investors.

Taxation

The tax regime of the SIF replicates the proven and tested tax regimes governed by the 1991 Law and the 2002 Law. Whether the SIF is organised with or without legal personality, capital contributions will be subject to a one-time fixed capital duty charge of EUR 1,250. SIFs are otherwise only subject to an annual subscription tax (taxe d'abonnement) of 0.01% assessed on the total net assets of the SIF. Furthermore, in accordance with the 1991 Law, the subscription tax does not apply to:

1. SIFs which invest in other undertakings for collective investment governed by the 2002 Law and which have already been subject to an annual subscription tax,
2. SIFs which invest in certain money market instruments only, as well as
3. SIFs implementing pension pooling schemes.

Luxembourg has signed 51 double-tax agreements some of which do not extend their benefits to Luxembourg undertakings for collective investment. The following jurisdictions do however grant treaty protection to Luxembourg SICAV/SICAFs: Germany, Austria, PR of China, Korea, Denmark, Spain, Finland, Indonesia, Ireland, Israel, Malaysia, Malta, Morocco, Mongolia, Uzbekistan, Poland, Portugal, Romania, Slovak Republic, Singapore, Slovenia, Thailand, Trinidad and Tobago, Tunisia, Turkey, and Vietnam. ►►

- ▶ The following countries may extend treaty benefits on a case-by-case basis: Bulgaria, Greece, Italy, Russia and Switzerland.

SIFs which are organised as FCP may in principle never claim treaty benefits themselves. Due to the lack of legal or fiscal nature of the FCP itself, investors may in principle directly claim treaty benefits from the target jurisdictions in which the SIF's investments are made.

Conclusion

The SIF with its low entry-level threshold, flexible legal structuring

options and its favourable tax regime completes the product range of existing investment vehicles available in Luxembourg. It has already proven to be extremely successfully in the last year, and the development of private equity as an alternative source of financing in the last years is further boosting its development. The experience and know-how already gathered by the Luxembourg authorities and practitioners in that respect will no doubt help foster an even faster development of this structure, which compare favourably with international on-shore and off-shore fund schemes to an international initiator and investor base. ■

Still Patchwork Instead of Systemic Tax Reform - 2008 Corporate Tax News from Finland

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Despite their good efforts, the speed of international tax development and general tax competition has very much strained the resources of the Ministry of Finance responsible for drafting new tax legislation in Finland. For corporations the evolving tax landscape and ever-pending changes cause uncertainties and potential complications.

The key tax act, the Corporate Income Tax Law, derives from 1968 and over the years it has been amended many times to meet the needs of developing business world and the Fiscus. This year the Ministry of Finance is again launching a new patchwork on tax laws and the systemic tax reform still has to wait.

Group taxation

In the international tax arena most jurisdictions seek to protect their tax bases. This trend can be seen in Finland in the implementation of transfer pricing documentation requirements, discussion on cross-border group contributions and pending discussion on thin capitalization rules. Potential modification of controlled-foreign-corporation legislation also has to be observed.

Cross-border loss relief denied

Under Finnish tax law resident companies can transfer their profits to another resident company by way of granting a tax deductible group contribution. There are several conditions required but all in all the system has been rather straight-forward. The mechanism can be used to offset losses of an eligible company or simply to transfer funds in a flexible way. After the Marks and Spencer case (Case C-446/03) Finnish companies sought to test whether a cross-border group contribution was allowed.

The Supreme Administrative Court ruled on 31 December 2007 on two cross-border cases. The first one was about a Finnish subsidiary wanting to give a group contribution to a UK resident parent company whose contribution the European Court of Justice had already ruled non-deductible (Case AA Oy C-231/05). The second one concerned a UK company which had losses and the shareholders planned to put the company into liquidation. The Supreme Administrative Court ruled that a Finnish corporation could not tax-efficiently contribute its profits to a UK group company to offset loss of the UK company. The UK company had tried to demonstrate in light of the Marks & Spencer case that the losses are final and the structure at hand and the plan were not evasive. However, the Court did not see a need to consult the matter with the ECJ and disallowed the deduction in Finland.

It appears that the current Finnish group contribution system survived in the first wave of international development. There are several similar cases pending in Sweden and it remains to be seen whether losses become available through the Swedish group contribution regime.

The EU Commission is currently working with the Common Consolidated Corporate Tax Base and wishing to issue a draft directive by the end of 2008. The progress of this initiative and the

international tax developments will likely determine whether the Ministry of Finance starts to redesign the Finnish tax consolidation system.

Thin capitalization in the pipeline

The Ministry of Finance is analyzing thin capitalization rules applied in other jurisdictions. It is expected that draft rules are released for comments during 2008. If so, new rules disallowing interest deductions of thinly capitalized companies may be in force already as of 2009.

Controlled-foreign-companies legislation will be amended

Finland will modify its controlled-foreign-company legislation to comply with the ECJ ruling on Cadbury Schweppes (C-196/04). It is likely that the government bill is given in April and new rules would be applicable as of 2009, potentially with some transitional rules.

The first 2007 draft aimed also to catch holding companies but after some debate, this plan was dropped. The new provisions will include an activities and substance test. It is likely that the tax rate test will be accompanied by a list of countries in which corporations are likely to be caught by the legislation and the profits be taxed upfront in Finland (black list).

First transfer pricing documentation to be provided soon

Finland implemented transfer pricing documentation requirements in 2007. The financial year starting on 1 January 2007 or later will be the first year for which the transfer pricing documentation is required. Companies having cross-border transactions are required to prepare transfer pricing documentation within six months from the year end. If requested, the documentation must be presented within 60 days.

The National Board of Taxes issued in October 2007 a circular letter to guide corporations on transfer pricing documentation. Generally, documentation prepared in accordance with the OECD guidelines or the EU TP guidance will be acceptable. Transfer pricing analysis based on pan-European searches is likely acceptable.

It is expected that the Tax Administration will start random checks on the documentation early autumn to test and enforce the new documentation requirements. A maximum penalty of €25,000 may be imposed if the tax payer does not comply with the documentation requirements. Standard penalties will apply on potential re-assessment of transfer prices.

Tax representative of a Finnish branch no longer responsible for local tax

As of 1 January 2008 the representative of a Finnish branch is no longer personally responsible for Finnish taxes. This new rule, however, concerns only head offices located in the European Economic Area, whereas local representatives of non-EEA headquartered branches remain liable. ▶▶

► **General corporate tax news**

Alignment with IFRS

Currently there are many sets of financial reports companies need to prepare: financial statements under the International Financial Reporting Standards and Finnish GAAP, tax reporting and the tax returns under tax laws and distributable earnings report under the Companies Act. There is an ambitious initiative to align Finnish tax rules with IFRS.

The Ministry of Finance has started to draft new pieces of tax laws to streamline tax and IFRS. The first drafts concern taxation of unrecognized gains and losses of certain instruments. There are newly drafted sections also for insurance and pension institutions but this piece of work is still in its early phases.

Alignment with the Companies Act

The Companies Act that entered into force in late 2006 introduced more flexible instruments to capitalize a company and also to provide share-based incentives to employees. Positive news, however, triggered a tax initiative to disallow costs of corporations acquiring its shares for incentive purposes. It may be that bonuses paid in cash, synthetic option arrangements, traditional option benefits and share incentives each have different rules that companies need to observe when evaluating various incentive schemes and deductibility of related costs.

The National Board of Taxes issued a circular letter in spring 2007 to advise on some items arising from the new Companies Act but for example interim dividend allowed by the Act still seem to be somewhat difficult area in taxation. ■

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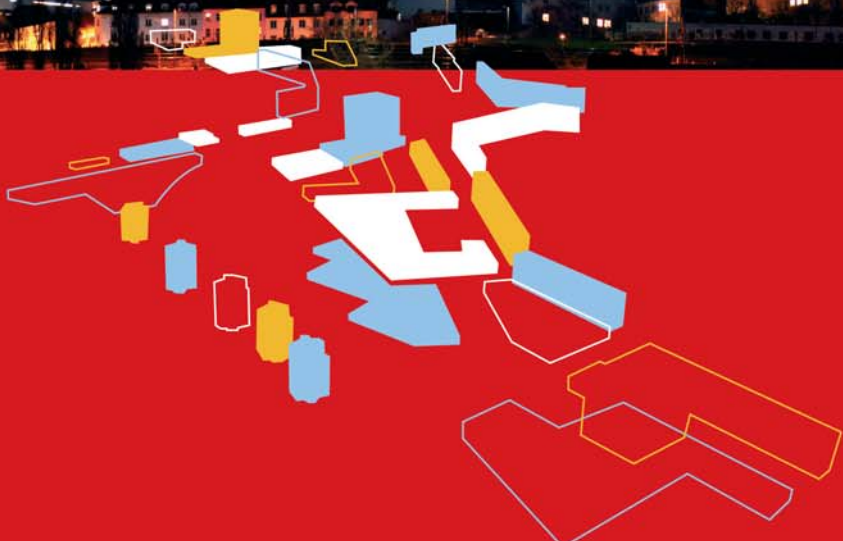
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