

SRI



Sustainability Research



Carbon Research

US climate bill: "Born to be Mild"

■ US climate bill: "Born to be Mild"

The US Congress is under pressure from the White House to design and pass a climate bill by the end of 2009. Democratic Representatives already had to water down ambitions in order to secure enough support for House passage. The Senate promises to be an even greater challenge, as Democrats have a less comfortable majority there. Passing the bill by year end remains unlikely, in our view. We propose an analysis of the House's bill.

■ Fears lessened on CO₂ costs for heavy industries

The threat of full auctioning mentioned by Mr Obama has faded away. Indeed, all sectors but transport fuels are set to receive generous free allocations out to 2025, thus preventing sectors such as steel, cement, chemicals and paper producers from facing significant CO₂ costs. We also expect the carbon price signal to emerge from such a scheme to remain under USD20/t out to 2020. We estimate oil companies would have to foot a ~USD32bn carbon bill, but that can be offset by a ~5% increase in gasoline prices.

■ Cooling down hopes for a green electroshock

~USD74bn of allowance value over 2012-2020E would support the funding of clean technologies. However, the bill is unlikely to create a green electroshock for renewable energies or change our view on wind players such as EDF EN, IBR Renovables, or Vestas – all of which we rate 3/Underperform – as it fails to set more aggressive targets for renewables by 2020. The auto industry players involved in clean vehicle programmes such as Renault-Nissan can expect USD9bn in positive fallout over 2012-2020E.

■ Mixed signals for international climate talks

Though encouraging, the emissions reduction target defined by the US is considered far too weak by Europe and emerging countries. The move is thus unlikely to unblock UN climate talks. In this context, the EU has no reason in our view to strengthen its 2020 reduction commitment from 20% to 30% that would add to the burden on its energy-intensive industries by 2020.

Erwan Créhalet

Carbon Analyst
 ecrehalet@cheuvreux.com
 (33) 01 41 89 75 18

Summary

Climate change: a key priority of Obama's presidency

The US is the second largest emitter of greenhouse gases, behind China, and accounts for one-fifth of global energy-related CO₂ emissions. The election of Barack Obama has given new impetus for climate legislation to be passed. Strategically, the move is seen as a way to endorse climate leadership at the international climate talks and to build a new energy policy leading to less dependence on foreign oil and more jobs in green technologies.

US climate bill: "Born to be Mild"

However, the White House must deal with a Congress that is rather reluctant to pass a law that would jeopardise the purchasing power of US citizens and competitiveness and jobs in traditional industries. The House's vote on the Waxman-Markey climate change bill cleared an important hurdle, but also revealed the difficulty of gathering all Democrats on the issue. Our analysis of House votes points to an even tougher time ahead in the Senate, where Democrats hold a thin majority. We believe that if any climate bill makes it through the legislative process, it will have a mild impact on the US economy. The deadline of the UN climate talks for a post-Kyoto agreement in December 2009 looks out of reach.

Low carbon costs and price signal expected by 2025

Under the Waxman-Markey bill, due to a lenient emissions cap, a generous 2bn limit on the use of carbon offset credits, and other cost containment provisions, we would expect the carbon price signal to emerge to remain under USD20/t out to 2020. In addition, all sectors but transport fuels are set to receive relatively generous free allocations out to 2025, thus preventing sectors such as steel, cement and paper manufacturing from facing significant compliance costs. An intra-sector low-carbon competitive advantage will fully reveal itself when free allowances disappear.

Deprived of CO₂ rights, we estimate oil companies would have to foot a ~USD32bn carbon bill, but that can be offset by a ~5% increase in gasoline prices, necessary to protect the tight margins of oil companies' downstream businesses, e.g. for BP, which is the European oil major with the highest exposure to the US.

USD74bn out to 2020 to support clean tech funding, but no green electroshock

13-16% of the value of allowances, which we estimate at USD74bn over 2012-2020, would be directed to clean technologies. This would notably make available USD45bn to states to help them to fund renewable and energy efficiency programmes. However, at the same time, as it fails to propose more ambitious renewable energy targets than current ones, the bill is unlikely to create a green electroshock for the US wind market or for players such as EDF EN (3/Underperform), Iberdrola Renovables (3/Underperform), and Vestas (3/Underperform), which have relatively high exposure to the US renewable energy market. Automakers involved in clean vehicle programmes such as Renault-Nissan can expect USD9bn in positive fallout. ~USD16bn would also help Carbon Capture & Storage technology get started.

Mixed signals for international climate talks

Though encouraging, the emissions reduction target defined by the US is considered far too weak by Europe and emerging countries. The move is thus unlikely to unblock UN climate talks. In this context, the EU has no real reason to strengthen its 2020 reduction commitment from 20% to 30%, and to increase the burden on energy-intensive industries by 2020. Globally, the "+2°C only" EU objective seems increasingly out of reach. If world leaders were to concede 1 more degree to global warming, this would boost the climate change adaptation theme.

CONTENTS

Summary	2
I— US climate bill: “Born to be Mild”	4
■ Overview of the US GHG profile and the Waxman-Markey climate bill	4
■ Low effect expected on household consumption and GDP	6
■ Weak carbon price likely to emerge	6
II— Free allocation of CO₂ rights prevails: generous and locked in until 2025	9
■ Industries secured free CO ₂ rights by 2025	9
■ Power sector: regulator vigilant on preventing windfall profits	10
■ Heavy industries' competitiveness well protected	11
■ Oil companies set to foot the carbon bill	13
III— Carbon to finance clean technologies	15
■ A USD74bn positive effect for clean technologies	15
■ Clean vehicles: Renault-Nissan well positioned	16
■ Carbon capture & storage: a push for a market to emerge	16
■ No green electroshock expected despite carbon funding	16
IV— Still lost in a legislative maze	19
■ The Senate hurdle looks much higher than the House	20
V— A trigger for Copenhagen?	22
■ Climate science: things look even worse than expected...	22
■ ...but climate plans fall short of the climate stabilisation pathway	22

■ CHEUVREUX'S SRI TEAM

Stéphane Voisin (coord.) France (33)-1-41 89 74 69 (Direct) svoisin@cheuvreux.com

Erwan Crehalet France (33)-1-41 89 75 18 (Direct) ecrehalet@cheuvreux.com

Corinne Gagne France (33)-1-41 89 73 07 (Direct) cgagne@cheuvreux.com

Cécile Lamotte France (33)-1-41 89 74 96 (Direct) clamotte@cheuvreux.com

Robert Walker London (44) 207 62 151 86 (Direct) rwalker@cheuvreux.com

With the collaboration of Charles Brégeon and Emmanuelle Ostiari

I—US climate bill: “Born to be Mild”

The US is the second largest emitter of greenhouse gases, behind China, and accounts for one-fifth of global energy-related CO₂ emissions. The election of Barack Obama has given new impetus for climate legislation to be passed. Strategically, the move is seen as a way to endorse climate leadership at the international climate talks and to build a new energy policy leading to less dependence on foreign oil and more jobs in green technologies.

However, the White House must deal with a Congress that is rather reluctant to pass a law that would jeopardise US competitiveness and jobs in traditional industries. The House's vote on the Waxman-Markey climate change bill cleared an important hurdle, but also revealed the difficulty of gathering all Democrats on the issue. This points to an even tougher time ahead in the Senate. We believe that if any climate bill makes it through the legislative process, it will have a mild impact on the US economy.

■ Overview of the US GHG profile and the Waxman-Markey climate bill

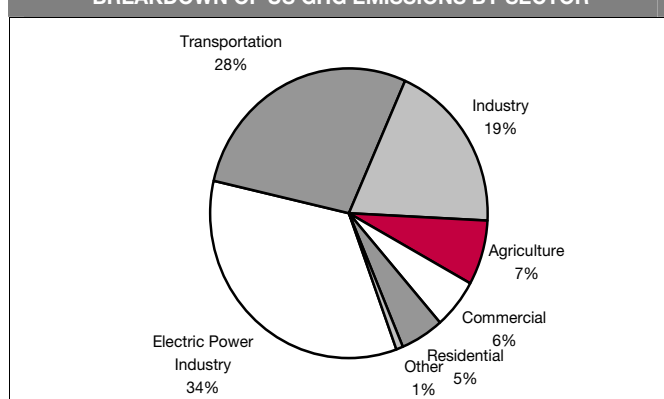
The US has a much “dirtier” greenhouse gas profile than other developed countries, for two main reasons:

- The country's power sector is more reliant than Europe on coal (~50% of electricity generation), which is seen as a strategic fuel as the US holds the world's largest coal reserves (proven coal reserves estimated at ~240bn tonnes, WEC 2007).
- Also, the transportation sector is highly carbon-intensive due to car fuel efficiency standards and gasoline price that are notably lower than in other developed countries. This further deteriorates the CO₂ per capita compared to other countries, as highlighted in the chart below (right-hand side).

This makes of the US the second largest emitter of greenhouse gases in the world behind China, but with a CO₂ intensity per capita that largely overshadows that of the EU and Japan, for instance, and dwarves the carbon intensity of China.

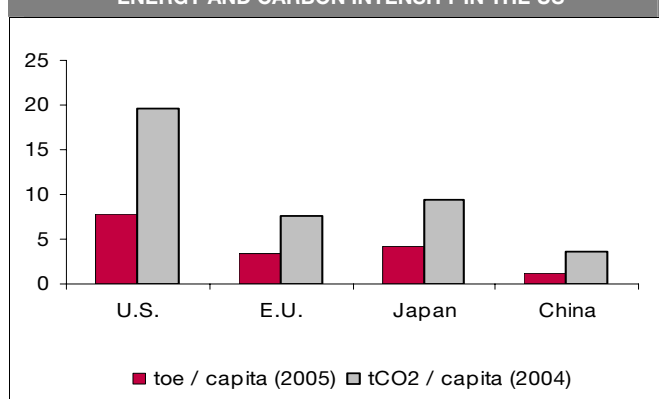
**An energy-dependant
and carbon-intensive
economy**

BREAKDOWN OF US GHG EMISSIONS BY SECTOR



Source: EPA

ENERGY AND CARBON INTENSITY IN THE US



Source: BP Statistical Review, WEO 08

A cap & trade system remains the privileged regulatory tool...

Key provisions of the Waxman-Markey climate bill

Lawmakers in Congress already started designing a climate change bill including cap & trade systems last year, with a view to George W. Bush's departure from the White House.

Earlier this year, the American Clean Energy and Security Act (ACESA), sponsored by Representatives Henry Waxman and Edward Markey, was introduced in the Energy & Commerce Committee of the House of Representatives.

The table below presents the key aspects of the Waxman-Markey climate change draft bill, which was passed by the House of Representatives on 26 June 2009, and of the Boxer-Lieberman-Warner bill, which was rejected by the Senate last summer.

The key criteria to assess a cap & trade scheme are:

- The scope of the coverage in terms of type of greenhouse gas and economic sectors;
- The timing and the stringency of the cap;
- The limit on the use of offsets and other cost containment measures, which, along with the previous criterion, will determine the carbon price signal to emerge from the scheme;
- The allocation of allowances (free, auctioned);
- Other provisions to support the development of low-carbon technologies.

SUMMARY OF KEY CLIMATE CHANGE BILLS PROPOSED BY CONGRESS

Climate change bill	Scope of coverage	2010-2019 cap	2020-2029 cap	2030-2050 cap	Allocation	Offsets and other cost controls	Early action	Technology and misc.	Status
Waxman-Markey (H.R. 2454)	7 GHGs; upstream for transport fuels, downstream for electric utilities and large sources, commercial and natural gas at LDCs; compliance to start in 2012 with some sources phased in later; separate HFC cap	3% below 2005 level by 2012	20% below 2005 level in 2020	42% below 2005 level in 2030; 83% in 2050	16% to help low-income consumers and workers; 62% handed out for free to regulated sectors; 13-16% to support clean energies; 9% to fund adaptation measures and avoid deforestation. Transitional phase-out of allowances to regulated industries from 2025.	2bn tonnes can be used for compliance (1bn domestic offsets and 1-1.5bn international); quarterly strategic reserve auction when carbon price reaches twice the price modelled by EPA		RPS: 15% in 2025, + 5% through energy efficiency actions; CCS: Regulatory support; Energy efficiency provisions; Low carbon fuel standard: 5% reduction from 2005 levels by 2023; 10% by 2030	Passed by the House in June 2009
Boxer-Lieberman-Warner	6 GHGs, upstream for transport fuels and natural gas; downstream for large coal users and GHG manufacturers; separate HFC cap	4% below 2005 level in 2012	19% below 2005 level in 2020	71% below 2005 level in 2050	Sector allowances total 75.5% in 2012: 18% to power plants; 11% to manufacturers; 12.75% to electricity and natural gas LDC; 15% to states. Auctions rising from 24.5% in 2012 to 59% in 2032	30% limit on supply of offsets. Cost containment auction using future year allowances	5% of allowances reserved for early actions	Bonus allocation for CCS and renewables; funds for technology and adaptation to climate change	Rejected by a full Senate vote in summer 2008

Source: Pew Center, CA Cheuvreux

...even though the tax versus cap & trade debate is still on

The tax versus cap & trade debate is also taking place in the US, with notable figures (such as James Hansen of the NASA Goddard Institute for Space Studies) arguing for a tax system (easier to implement and predictable carbon price signal). Lawmakers in Congress have nevertheless thus far proposed only cap & trade-based systems for regulating greenhouse gas emissions – an option that is also favoured by the White House.

Macro impact set to be mild...

...with a 2020 emission cap less stringent than that of the EU ETS...

Recent polls show that the number of citizens supporting the cap & trade option has declined, but they remain in the majority (52%).

■ Low effect expected on household consumption and GDP

The implementation of the cap & trade scheme would create *ex nihilo* an amount of emissions allowances (carbon credits) with a total value ranging from USD50bn in 2012E to ca. USD90bn by 2030E.

Although such figures look impressive, the net economy-wide cost of the scheme is likely to remain fairly limited. The EPA estimates that this would dent reference consumption per household by USD80-111 per year (NPV) on average. This loss in consumption would cut growth rate prospects for consumption in the US by an estimated 2 basis points (0.02%) between 2010 and 2030. Greenhouse gas mitigation could shave 2-4 basis points off the average GDP growth rate between 2010 and 2030.

However, these estimates take into account only the drawbacks of the plan and do not factor in potential costs avoided due to climate change mitigation (e.g. adaptation costs).

■ Weak carbon price likely to emerge

The carbon price of a cap & trade scheme is mainly determined by: 1) the stringency of the cap imposed on the greenhouse gas emissions of regulated sectors; and 2) the openness of the system to offset carbon credits, which provide a higher range of emission abatement options often at a lower cost.

The 2020 cap could have been more ambitious...

The Waxman-Markey climate bill sets two types of targets. One applies to US-wide greenhouse gas emissions, which are to be cut by 3%, 20%, 42% and 83%, respectively, by 2012, 2020, 2030 and 2050, compared to 2005 levels.

Emission sources capped under the cap & trade system have relatively similar targets, except for 2020, where the cut is limited to 17%, i.e. a 1.2% average annual cut between 2005 and 2020. HFC gases would notably be regulated under a separate cap & trade scheme.

Although decoupling CO₂ emissions from economic growth remains a challenge, the apparent stringency of this cap has to be put in perspective, as:

- The 2020 cap is less stringent than EU objectives (21% under 2005 levels for capped sectors);
- The projected growth CO₂ emissions under a “business as usual” (BaU) scenario is estimated at 0.35% p.a. on average between 2012 and 2020. This can also be compared to a 0.2% average growth p.a. between 2000 and 2005.
- More sectors are capped compared to the EU ETS, which provides more CO₂ abatement potential, notably in the transportation and housing sectors, for which other incentive plans can be made available and interfere by decreasing the net CO₂ abatement costs.

**...and 2bn carbon
offset allowances p.a.
for compliance**

**We expect a carbon
price signal lower than
in Europe by 2020**

COMPARISON OF EFFORTS LYING BEHIND US AND EU 2020 EMISSION CAPS

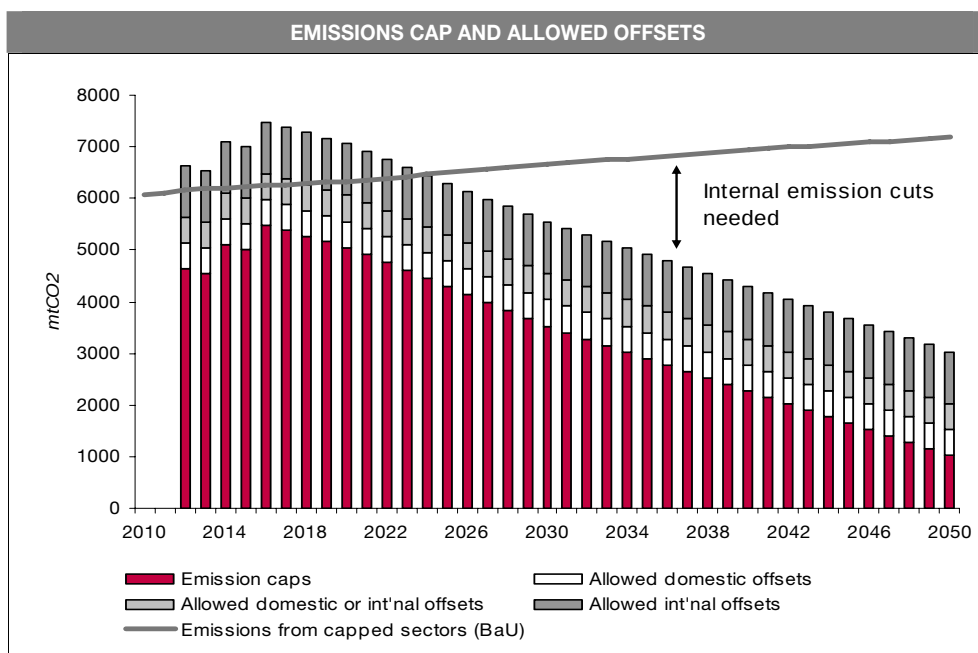
	Emission cut by 2020 vs. 2005	Implicit CAGR	Avg. emissions growth rate (capped sectors) 2000-2005 (%)	Carbon-intensity improvement needed annually
EU	-21%	-1.6%	0.5%	-2.1%
US	-17%	-1.2%	0.2%	-1.4%

Source: CA Cheuvreux, UNFCCC

...and the wide use of offset credits is likely to weigh on the CO₂ price

In addition, the draft bill would allow regulated sectors to use a very large 2,000mt CO₂-equivalent of both domestic (1bn) and international offsets (1bn) each year for their compliance with emission caps, instead of having to make internal emissions reductions.

As shown in the chart below, this cost containment measure theoretically allows regulated sectors to rely exclusively on offset credits without changing the way they operate until 2024.



Source: CA Cheuvreux, ACESA, EPA

Such a measure is likely to weigh significantly on the price of US emission allowances by 2024, as offset credits may offer the marginal CO₂ abatement needed to clear the market balance, at a low cost (<USD20/t).

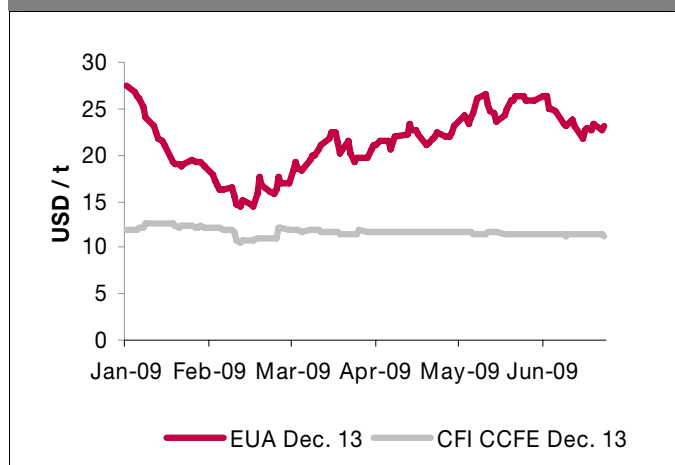
However, we consider that reaching a 1,000mt CO₂ reduction through domestic projects will certainly be impossible, as projects would have a playing field restricted to the remaining 15% US greenhouse gas emissions not covered under the US ETS.

At the first release of the draft, the EPA estimated allowance prices at USD13-17/t CO₂ in 2015.

However, the easing of the cap from 20% to 17% below 2005 levels and changes in the use of offsets have already changed the situation, and we can expect the US CO₂ price to remain under USD20/t until 2020.

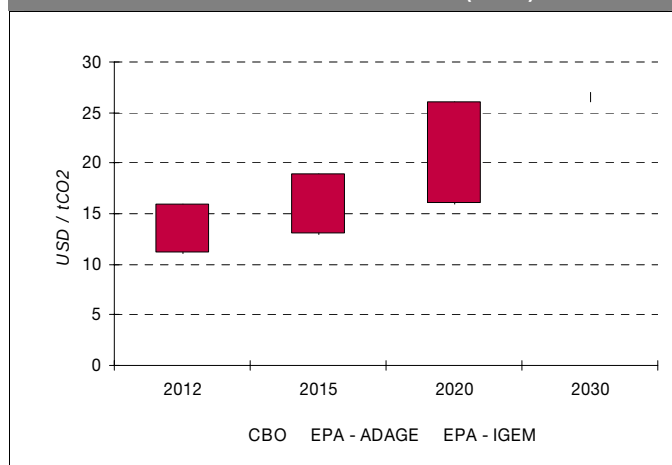
Emission allowance contracts are already quoted on the Chicago Climate Futures Exchange owned by Climate Exchange plc and have traded in a USD10.5-12.5/t price range since the contracts exist.

CARBON PRICE QUOTATIONS OF US AND EU ALLOWANCES



Source: Reuters, CCFE, CA Cheuvreux

RANGE OF PRICE FORECASTS (USD/t)



Source: CBO, EPA, CA Cheuvreux

This may cause the EU to refrain from linking the EU ETS to such an offset-flooded US ETS, since the EU has been seeking to limit the inflow of international offsets for the post-2012 period, notably to reach a carbon price signal high enough to incentivise internal emission reduction projects through low-carbon technologies.

Strategic reserve to control price trend

The bill also calls for the creation of a strategic auction reserve of allowances. In case the US CO₂ price reaches a level twice as high as EPA projections (i.e. ~USD30/t), the administration would be allowed to organise auctions with 'forward allowances' in order to "calm down" CO₂ prices.

A boost for demand for offset carbon credits

This measure may create a potential USD16bn p.a. market for domestic offset credits. Since projects will have to take place in non-capped sectors, this puts most of the potential in the hands of the agricultural and forestry sectors. For instance, no-till farming practices (whose carbon mitigation benefits are controversial) and afforestation projects are set to be rewarded by offset carbon credits that regulated companies will be able to buy for their compliance with their emissions caps.

On the market for international offset carbon credits, US businesses may well take over from EU industries as key buyers of project-based carbon credits (CERs or any form these may take in a post-Kyoto international agreement), since the US ETS would create a huge potential annual demand of 1bn-1.5bn credits. This must be compared with:

- Current demand from EU players – expected to be the main buyers by 2012: the EU ETS potential demand is only 1.3bn over the five-year period 2008-2012;
- The current project pipeline of Clean Development Mechanisms points to an average supply of 570 million credits p.a. over 2013-2020 (UNEP RISOE CDM Pipeline).

Increased visibility for post-2012 carbon offset credits

II – Free allocation of CO₂ rights prevails: generous and locked in until 2025

All sectors but transport fuels are set to receive relatively generous free allocation out to 2025, thus preventing sectors such as steel, cement and paper manufacturing from facing significant compliance costs. We estimate oil companies (e.g. BP) would have to foot a ~USD32bn carbon bill, which could, however, be rather easily passed on to customers. This would imply notably a ~5% increase in gasoline prices.

■ Industries secured free CO₂ rights by 2025

The coverage of the scheme will be phased in from 2012 to 2016 with industries and oil refineries entering in 2014, and natural gas distributors in 2016. At this date, the scheme should cover ca. 85% of US 2005 greenhouse gas emissions sources.

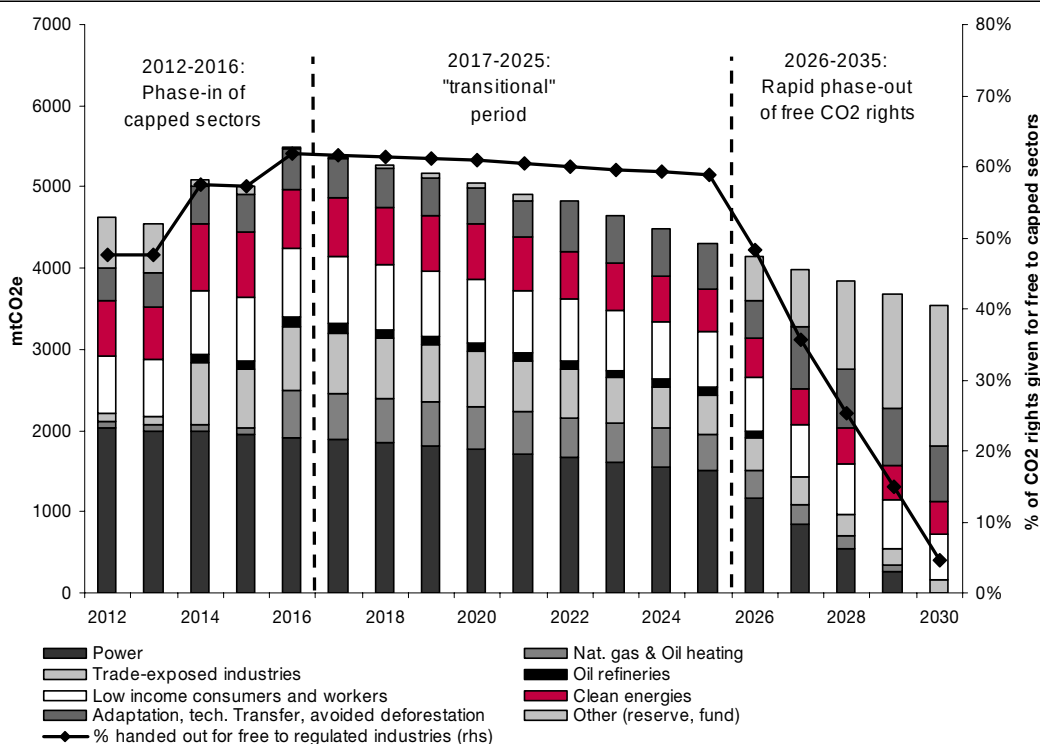
Democrats have come up with an already generous scheme to hand out ~60% of allowances for free – out of the total amount of CO₂ rights made available (the cap) – to regulated players (electricity utilities, natural gas and heating oil distributors, trade-exposed industries and oil refineries), despite Mr Obama's initial call for a system based on full auctioning.

The amount of free CO₂ rights will initially decrease slightly along with the overall emissions cap before a quick phase-out period starting not before 2025. While providing long-term visibility to industry players, this would in turn lock in generous treatment until 2025.

The remaining 40% of allowances would either be auctioned off or given to other economic players (states, funds, clean energy project developers). The chart below shows planned allocation of emission allowances.

Regulated industries set to receive 60% of allowances for free overall

EMISSION CAP AND ALLOCATION OF CARBON ALLOWANCES



Source: CA Cheuvreux, ACESA (June 2009)

Free CO₂ rights
granted to prevent
electricity price hikes

Regulatory structure
limits the windfall
profit effect

Deregulated coal-
based players also
granted free CO₂
rights

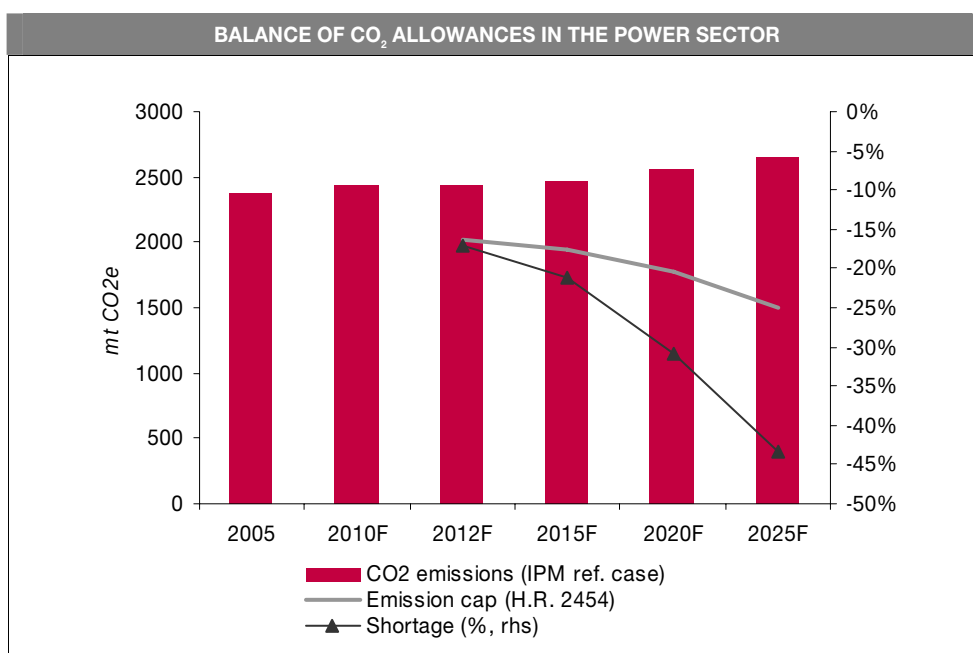
■ Power sector: regulator vigilant on preventing windfall profits

The structure of the power sector and electricity markets varies substantially across the US. Historically regulated, some states (e.g. the Northeast, the West Coast and Texas) began a deregulation process in the 1970s. The energy mix also differs widely with dependence on coal ranging from 1% (e.g. California) to 98% (West Virginia) of power generation.

In order to limit sharp inflation in electricity prices, free CO₂ rights would be granted to: 1) power plants run by local electricity distributors on regulated markets; 2) power generators under long-term supply contracts; and 3) coal-fired power plants on deregulated electricity markets.

The draft bill clearly states that the value of free CO₂ rights would have to be passed on to electricity consumers, in an attempt by the regulator to avoid a windfall profit effect for electricity utilities. We therefore **do not expect a significant rise in electricity prices due to the implementation of a US ETS (as has been the case in Europe) until 2025** and the start of the phase-out of free allowances.

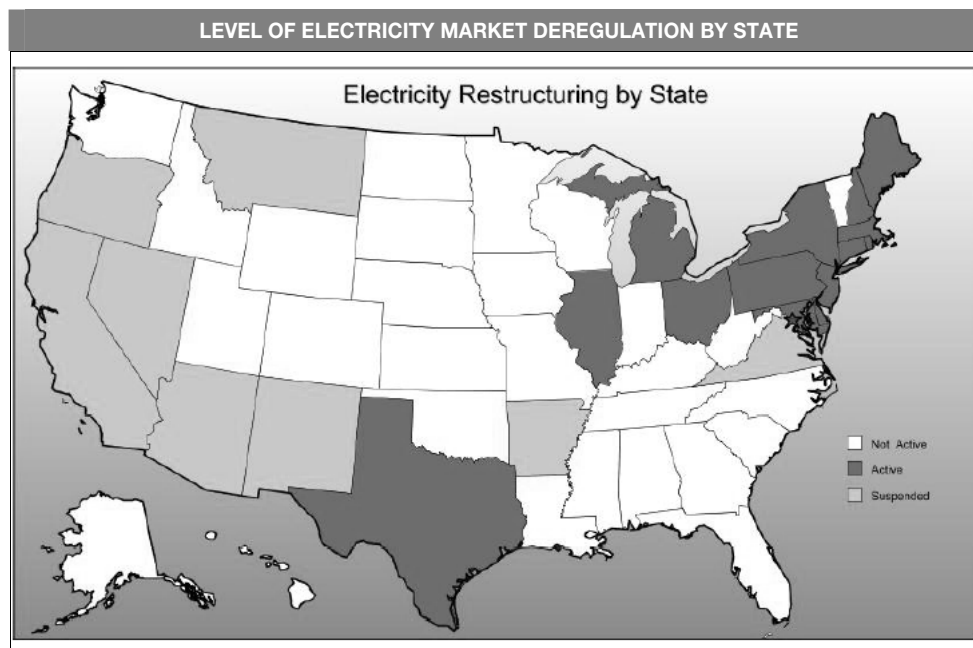
Indeed, we estimate that CO₂ allowances granted to the power sector in 2012 would represent ~85% of 2005 sector emissions, while the gradual decline in allocation creates a shortage of CO₂ rights of ~43% by 2025, before surging to 100% by 2030.



Source: EPA, H.R. 2454, CA Cheuvreux

Even on deregulated electricity markets (e.g. states in the Northeast and Texas; see chart below), the increase in electricity prices is likely to remain controlled as the bill calls for free CO₂ rights to be granted to coal-fired power plants on the deregulated electricity market.

Based on the allocation methodology, we estimate that these installations will nevertheless face a shortage of at least 50% from the beginning of the scheme. In our view, such a measure will **mute the low-carbon advantage of natural gas over coal for electricity production and can "justify" a price increase of just ca. USD7/MWh out to 2020.**



Source: EIA

■ Heavy industries' competitiveness well protected

No significant CO₂ compliance costs expected by 2020...

The scheme plans to ensure that the competitiveness of US industries deemed exposed to international trade and with high carbon intensity will not suffer from the implementation of the cap & trade system.

The main provisions for this are:

- 15% of total allowances will be given for free to sectors for which CO₂ costs may affect competitiveness. The allocation will be determined under an output-based rebate system (including both direct and indirect CO₂ costs);
- A phase-out of free allowances will start in 2026 and in 2035, unless the President decides to pursue free allocation;
- From 2020, the President can decide to impose a broader tax adjustment to protect US industries from competition from foreign products not exposed to carbon costs.

OUTPUT-BASED REBATE-ELIGIBLE SECTORS

H.R. 2454 eligible sectors
Pulp, paper and paperboard
Basic chemicals
Resin, synthetic rubber, and synthetic fibres
Nitrogenous fertilisers
Ceramic, clay, glass
Cement, lime
Aluminium
Non-ferrous metals

Source: EPA

**15% of free CO₂ rights
directed to a list of
trade-exposed sectors**

The paper, chemicals, metals and cement sectors spared

Limiting risk on the competitiveness of US industry...

Although the iron & steel industry does not appear in this preliminary list established by the EPA, we believe that the list is likely to be supplemented, as the sector was clearly mentioned by lawmakers.

We expect from such a bill neither significant CO₂ compliance costs out to 2025 for these sectors (see preliminary list in the table above), nor high indirect CO₂ costs as the increase of electricity prices would be tempered.

As CO₂ costs will barely materialise for these industries (before the phase-out of free CO₂ rights starting in 2025), we do not foresee any substantial shift in competitiveness between US and foreign industries, or within industries competing on the same markets (e.g. building materials) due to the implementation of such a US ETS.

...but a low-carbon competitive advantage is set to emerge over time

However, assuming free CO₂ rights are granted based on sector CO₂ efficiency benchmarks, this would create an intra-sector competitive advantage for players with low carbon profiles. Although this advantage is likely to be muted at the beginning of the scheme by generous allocations and a low carbon price, it is set to increase in the long term, in our view, notably as from 2025 with the phase-out of free CO₂ rights.

...and postponing the materialisation of a low-carbon competitive advantage

EU cement companies with a significant production footprint in the US

A large portion of US cement manufacturing assets are owned by EU companies. The implementation of a cap & trade system would extend the scope of these groups' CO₂ emissions that is regulated under an emissions trading scheme, and in our view strengthen the long-term competitive advantage of being low carbon in this sector (see our 'Cement vs. Carbon' report, September 2008, for a more detailed analysis of this issue).

As long as clinker substitution remains limited under US cement norms, the energy efficiency of kilns will remain a key option to reduce energy/carbon intensity. We believe this underscores the need for those companies to complete 'clean-up' programmes of their US assets.

EXPOSURE OF EUROPEAN CEMENT MAKERS TO THE US

	North Am.	RoW	EU (EU-27 est.)
Buzzi Unicem	26%	27%	48%
Titan	20%	42%	38%
Lafarge (pre-Orascom)	18%	46%	36%
Vicat	15%	49%	36%
Cementos Portland	13%	17.9%	70%
Ciments Français	12%	63%	25%
Holcim	10%	68%	22%
Italcementi	10%	50%	40%
Cementir	0.5%	43%	57%

Source: CA Cheuvreux, Company data

EU chemicals companies such as BASF and Bayer would also be covered by the scheme for their US assets. BASF and Bayer emitted 4mt and 0.5mt of CO₂-equivalent, respectively, in the US/North American region in 2007 and consumed 1.6TWh and 2.1TWh, respectively, of electricity.

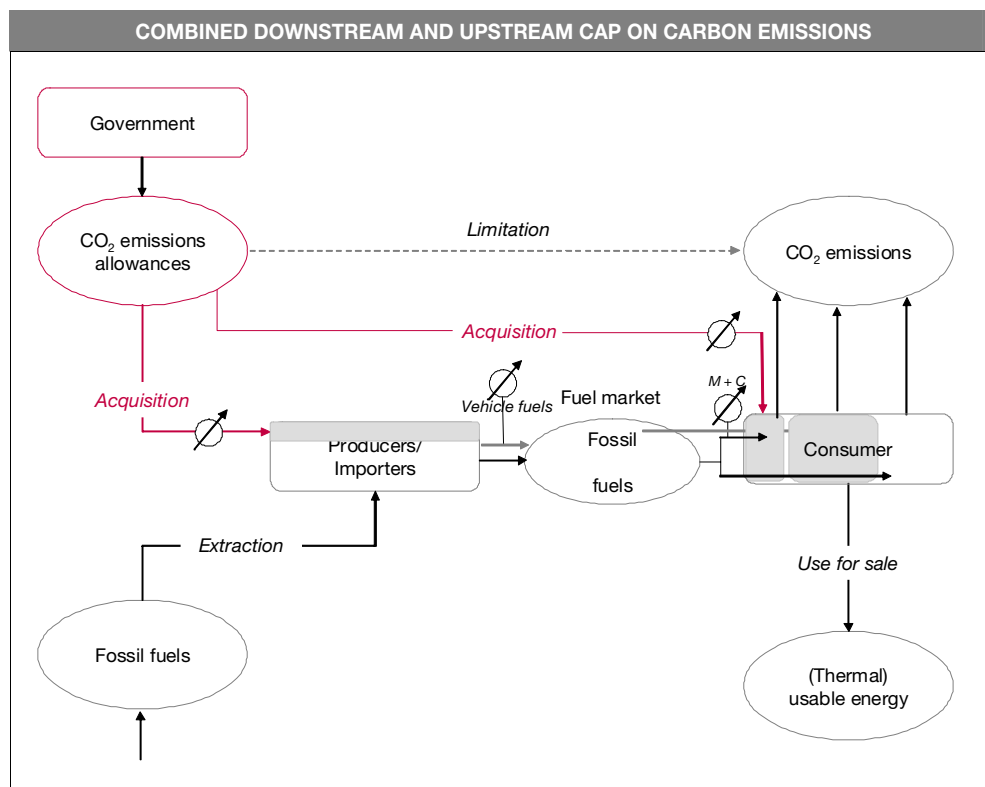
As for **ArcelorMittal**, 25% of group's 2008 production is in North America, where the group holds a ~22% market share. The group reported 203mt of direct CO₂ emissions globally and purchased 50.5TWh in 2007. We thus consider it would have high exposure to a US ETS.

The scheme plans to also cap ~2bn of transport CO₂ emissions

Oil companies set to foot the carbon bill

Another key difference in the US cap & trade system lies in the fact that it aims to put a cap on emissions of all economic sectors (including mobile sources of emissions), and not just on heavy industries, as is the case in Europe.

Rather than imposing a cap on a myriad of emitters (>200m individual autos, and 100m residential commercial buildings), the idea consists of an upstream cap placed on fuel producers or distributors, corresponding to the carbon content of the products they sell.



Source: CA Cheuvreux

This would make oil companies liable for the CO₂ emissions of the products they sell...

New liabilities and cash outflows for oil companies

We understand that refiners or suppliers of petroleum products would thus be capped for their clients' CO₂ emissions (so-called scope 3) implied by the use of the products. Since the bill does not plan to grant any CO₂ rights to transport fuel distributors, we assume they will have to buy an amount of carbon credits equivalent to their cap.

Considering that the cap is applied to oil companies' refining & marketing business, this would create a liability on their balance sheets. For instance, BP owns ~8% of refining capacity in the US, and we estimate that the petroleum products the group refines there emit ca. 166mt in CO₂ once burnt (2007). Therefore, we would expect the impact of making oil majors liable for surrendering CO₂ rights to be significant cash outflow, corresponding to the purchase of CO₂ rights.

OIL GROUPS' EXPOSURE TO POTENTIAL CO₂ COSTS IN THE US

	Nominal refining capacity	As a % of US capacity	Transportation end-user emissions, mt CO ₂ (est.)	Cost of CO ₂ rights at USD15/t (USD m)
Total US	17.6	100%	1 995	29 925
BP	1.46	8.3%	165	2479
RD Shell	0.8	4.5%	91	1360
Total	0.17	1.0%	20	296

Source: EIA, EPA, company data, CA Cheuvreux

...leaving them no choice but to pass the carbon cost on to customers

Such an upstream cap would be a first, hence a technical challenge, in our view. We do not see Europe following this path – at least not between now and 2020 – since all the legislation passed with the climate & energy package set rules for mobile sources of emissions outside the EU ETS.

The impact on gasoline prices would remain relatively limited (~+5%)

However, given the already extremely tight operating margins in the downstream business, groups are likely to compensate by passing this extra carbon cost on to their clients. Since all players would face an equivalent constraint, we believe the ability to pass costs on to clients will probably be high.

The scheme is thus set to raise the price of transportation fuels. Once burnt, a gallon of gasoline and diesel emits 8.8kg and 10.1kg CO₂, respectively. At USD15/tCO₂, the extra carbon cost would inflate retail prices by ~5% and ~6%, for the two types of fuel, based on current US average retail gasoline/diesel prices at the pump.

ESTIMATED IMPACT OF CAP & TRADE SYSTEM ON GASOLINE PRICES

	Price / gallon (June 2009)	Crude oil	Refining	D&M	Taxes	CO ₂ content (kg CO ₂ /gallon)	Effect of carbon surcharge @ USD15/t
Gasoline	2.62	56%	12%	12%	20%	8.8	5.0%
Diesel	2.69	52%	10%	17%	21%	10.1	6%

Source: EIA, CA Cheuvreux

5% carbon surcharge can be expected in gasoline prices

Although this carbon surcharge is likely to increase along with the carbon price, such an increase is dwarfed by the high volatility driven by the price of crude oil.

III – Carbon to finance clean technologies

The development of renewable energies in the US has thus far mainly been driven by the implementation of State Renewable Portfolio Standards and Federal Production/Investment Tax Credits. Of course, these measures have a cost for taxpayers, which raises the question of their sustainable funding. Under the Waxman-Markey cap & trade scheme, 13-16% of the value of allowances, which we estimate at USD74bn over 2012-2020, would be directed to clean energies. This would notably make available USD45bn to help ensure the funding of current renewable and energy efficiency mandates.

However, energy provisions of the bill fail to set significantly more ambitious mandates than current ones. If passed, the bill would not be a strong trigger for the US wind market and players such as EDF EN, Iberdrola Renovables and Vestas, all of which we rate 3/Underperform.

Automakers involved in clean vehicle programmes such as Renault-Nissan can expect a positive USD9bn in fallout.

■ A USD74bn positive effect for clean technologies

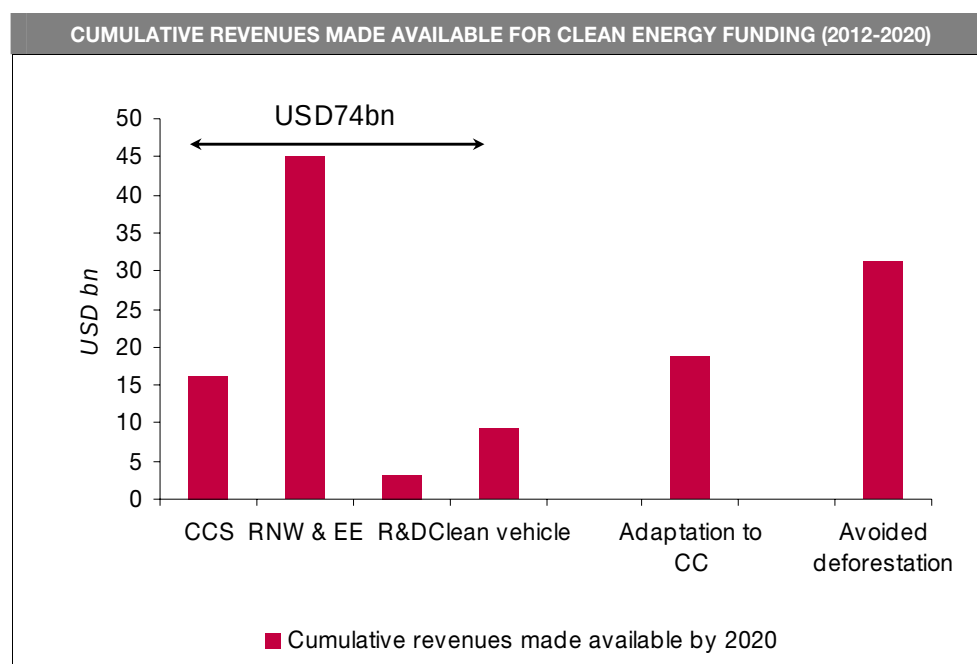
As shown in section I, the carbon price signal delivered by the proposed cap & trade scheme is likely to remain relatively weak by 2020, and certainly too weak to create a strong incentive by itself for investments in advanced clean energy projects.

However, the scheme plans to redistribute a significant share (13-16%) of the total value of allowances (USD10.1bn in 2020) to states or directly to businesses to support the development of clean technologies. We highlight here that this is made possible by the decision not to grant free CO₂ rights to the capped transportation sector.

RNW energies & energy efficiency will take the largest share (4.5-9.5%), before carbon capture & storage projects (2-5%), and electric cars (1-3%).

This may provide ~USD74bn over eight years between 2012 and 2020, broken down as shown below.

**USD74bn of CO₂ rights
directed to
renewables, energy
efficiency, clean cars
and CCS by 2020**



Source: CA Cheuvreux

**Nissan well positioned
to grab a share of the
USD9bn dedicated
carbon funding**

**A USD16bn carbon
push to help CCS
technology get started**

**USD45bn of carbon
credits to help states
with the funding of
their renewable
mandates...**

We also highlight that the scheme also plans to direct a substantial share of the emission allowances (in value terms) to fund measures to adapt to the effects of climate change (~USD19bn out to 2020, for dykes against rising sea levels, for instance) and to avoid deforestation (USD31bn) in exchange for specific forest carbon credits (REDD, Reduced Emissions from Deforestation in Developing countries).

■ Clean vehicles: Renault-Nissan well positioned

Clean vehicle programmes (e.g. plug-in hybrid) may receive ~USD9bn between 2012 and 2020.

In the automotive sector, we highlight Nissan (and Renault through Nissan) among those set to benefit from the financial support given to clean car projects. Nissan is building up its position as a key player in full-electric cars (plan to launch its electric vehicles as early as 2010 in California) and will receive USD1.5bn, or 19%, of the USD8bn subsidised loan granted by the Federal government (under a stimulus package).

Daimler may also take a part in the funding, since the group recently bought 10% of TESLA Motors (electric batteries market), which is to receive USD0.65bn of the Federal super loan.

Fiat-Chrysler has also already proven successful in winning half of a USD448m grant from the Department of Energy in a plan to develop electric vehicles.

■ Carbon capture & storage: a push for a market to emerge

In nine years starting in 2012, we estimate USD16bn will be made available for early CCS projects. This funding will last until 2050 and will be gradual over the period (e.g. reaching USD4bn in 2020), with a significant step-up planned in 2018.

We consider this would increase the chance of a market emerging as from 2020, as the deployment of demonstration plants should help reduce the costs of this technology, which remains prohibitive (USD35-100+ per tonne of CO₂ abated), notably with regard to lower prospects for the carbon price in the US than in the EU.

Capital goods players such as Siemens and Alstom expect to be able to start commercialising CCS-equipped power plants around 2015.

The development of CCS technology is also likely to create a market for industrial gases players (e.g. Linde, Air Liquide), as suppliers of oxygen (for oxy-fuel applications) and providers of transportation facilities for carbon dioxide (to sequestration sites).

Despite strong support from regulators around the world, we believe it is too early to play this story, as the economics and sustainability of this technology have yet to be proven.

■ No green electroshock expected despite carbon funding

The USD45bn of the total value of allowances will be directed to states and not private players. This is likely to participate in the funding of support policies for the development of renewable energies and to help states to achieve renewable energy mandates.

Current State Renewable Portfolio Standards (RPS) point to a target requiring some 190TWh of additional electricity from renewable energy sources by 2020 (or app. 63GW). Assuming each subsidised megawatt-hour costs ca. USD20 to the administration's budget, this would add a USD3.8bn cost burden for taxpayers in 2020.

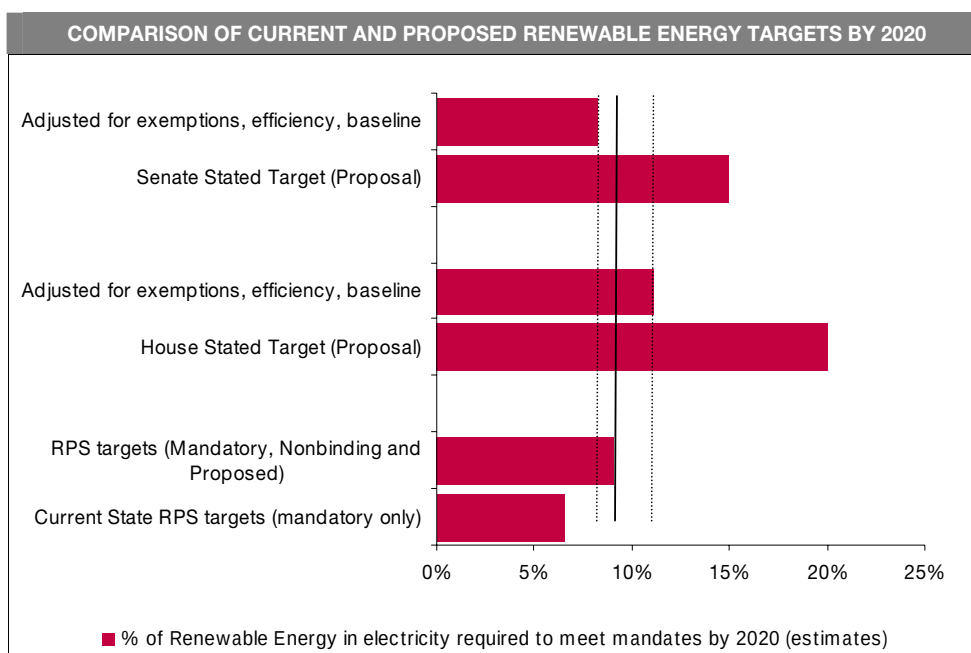
This figure must be compared with the USD4.2bn-6.2bn of emission allowances value set to be dedicated to the development of renewable and energy efficiency each year.

...but renewable targets unlikely to be raised significantly

Proposed renewable energy mandates do not create a new deal

We note that the Waxman-Markey bill also sets federal "Renewable Electricity Standards", i.e. a mandate for utilities to obtain 20% of electricity from renewable energies by 2020, but with the possibility to satisfy up to 25% of this standard with electricity savings (energy efficiency). The draft proposed by the Senate is even less ambitious (12% by 2020).

Since these proposals do not really deviate from current mandates (RPS: Renewable Portfolio Standards) and business-as-usual expectations, such provisions are unlikely to raise market expectations.



Source: CA Cheuvreux

EDF EN, IBR and EDP are most exposed to the US

Therefore, although we estimate that the prospect of carbon revenues to fund renewable energies is good news in itself, the obvious lack of upside on renewable energy mandates proposed by the currently debated energy bills is likely to weigh more.

We summarise below the exposure to the US (as a % of sales) for our universe of renewable energy stocks.

RENEWABLE PLAYERS' EXPOSURE TO THE US

	% of sales in the US
Centrotherm PV	Below 3%
Conergy Ag	Below 3%
Manz Automation AG	5%
Q-Cells	Below 3%
Rec Asa	8%
Roth&Rau	4%
SMA	7%
Solaria	0%
Solarworld	8%
Wacker Chemie	20%
Acciona	3 to 4% of EBITDA
EDF Energies Nouvelles	49%
EDP (Renovaveis)	32% of EBITDA
Iberdrola Renovables	38% EBITDA
Terna Energy	0%
Gamesa	10% of EBITDA
Nordex	6%
Vestas	26%

Source: CA Cheuvreux

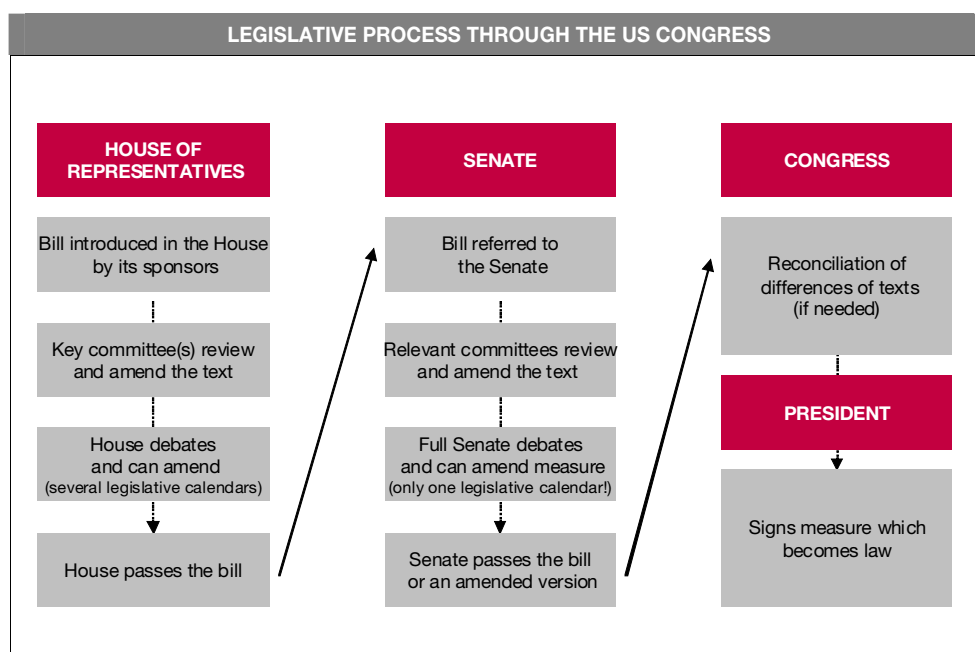
Waxman-Markey is not yet halfway through the legislative process

IV – Still lost in a legislative maze

The White House is putting pressure on Congress to move quickly to pass a climate bill, as it has been defined as a top priority for Mr Obama's presidency.

However, it remains very difficult, in our view, to see a text passed by the end of this year, in other words by the Copenhagen deadline in December.

By passing the House of Representatives, the climate bill **has not even made it through half of the complex US legislative process**. To become law, the bill will need the approval of three key authorities: 1) the House of Representatives; 2) the Senate; and 3) final approval by the President himself.



Source: CA Cheuvreux, Congressional Directory

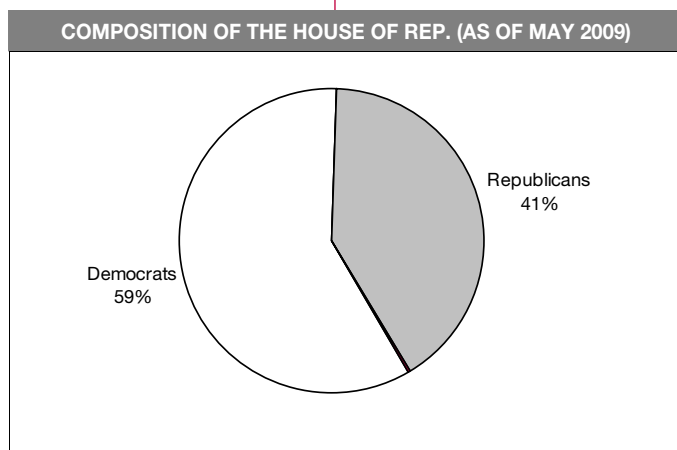
The Senate is the key obstacle

We expect Obama not to oppose the bill as long as it contains a cap & trade system with an emissions cap in line with the objective defined during the presidential campaign, i.e. bringing US GHG emissions back to 1990 levels by 2020.

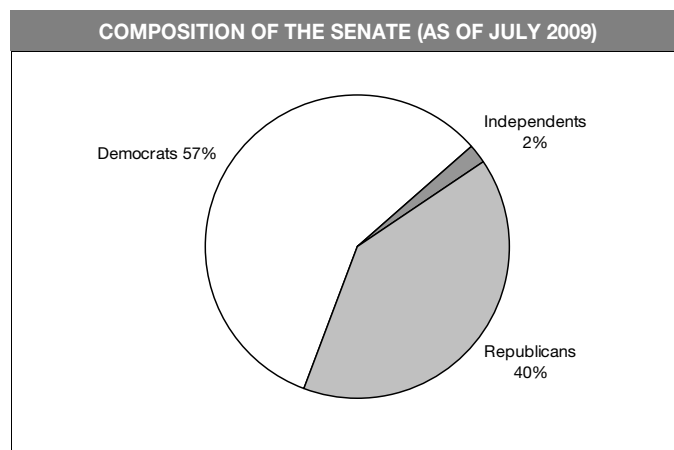
In our view, however, the Senate is a strong obstacle for the bill on its path to becoming law – and especially to become law by year end.

■ The Senate hurdle looks much higher than the House

Along with winning the presidential elections, Democrats strengthened their position in Congress and currently (as at 6 July 2009) hold 58 seats in the Senate, plus two independents that tend to vote with the Democrats (i.e. 60% of votes).



Source: CA Cheuvreux



Source: CA Cheuvreux

A Democratic “super majority”, but by a razor thin margin

Geographical bias outweighs partisan lines

However, their position in the Senate for passing a climate bill is much less comfortable than in the House of Representatives, because:

■ Although Democrats now have a **60-vote “super-majority”** allowing them to avoid the opposition blocking a vote (via a “filibuster”, or endless debate aimed at preventing a bill from coming up for a vote), this requires them to muster all the votes on their side. In contrast, rules in the House of Representatives do not permit filibusters.

■ The composition of the Senate (two representatives for each state) does not play in favour of the climate bill. Due to economic and distributional effects of the bill, the issue **tends to break across partisan lines**. For instance, our analysis, in the table below, shows that more than 50% of Democratic House Representatives in 11 states with higher-than-average emissions per capita opposed the bill or were undecided (“fence sitters”) the day before the House vote (source: E&E daily, 25 June 2009).

CORRELATION BETWEEN STATE CARBON INTENSITY AND CLIMATE BILL SUPPORT

State	Carbon per capita	Democratic congressmen			% No votes + fence sitters in total
		No	“Fence sitter”	Yes	
AL	Very high	1	1	1	67%
AR	High	2	1	0	100%
GA	High	1	3	2	67%
IL	Low	1	2	9	25%
LA	Very high	1		0	100%
MS	High	1	1	1	67%
ND	Very high	1		0	100%
OH	High	2	4	4	60%
OK	Very high	1		0	100%
PA	Low	2	4	6	50%
UT	High	1		0	100%
WV	Very high	2		0	100%
TX	High		7	5	58%

Source: CA Cheuvreux, EE News 25/06/09, UCLA

**Tight schedule by the
end of the year**

On the other hand, in the House Committee, only one Republican – representing a California congressional district with high potential for wind and solar projects – voted in favour of the Waxman-Markey draft bill. Some ten Democratic senators expressed concerns over the bill. In our view, the bill already includes important concessions to industries and Democrats representing coal or heavy industrial states at the House level.

■ **Timing:** The Senate's **calendar is tighter** and is filled due to healthcare reform, which is another key priority for the Presidency. Although the Senate's environmental committee seems ready to handle the bill quickly, and to vote on it by year end, the prospect of seeing a vote on the full Senate floor by year end remains very unlikely.

■ **The breakdown of committees implies a split in the Waxman-Markey bill:** Senate committees are organised in a different manner than in the House, so that the comprehensive climate & energy bill designed by a single House committee will be handled by two different committees in the Senate, with the risk of losing the budget equilibrium of the whole bill (e.g. the cost of renewables, funded by emissions allowances) or raising protests (e.g. from “Blue Dogs”, i.e. Democrats that are conservative on fiscal and economic issues).

**Copenhagen looms,
but a rush may be
risky**

To conclude, we estimate that a vote of the Senate environment committee is possible in the months to come, and that the draft bill will not be significantly altered as Senator Barbara Boxer, chairman of the Senate committee on environment and public works, has stated that her committee will use the Waxman-Markey framework to design the bill. However, a full Senate vote remains very unlikely by year end and precipitating the vote may be risky, as a “No” would cast a shadow over the US position at the Copenhagen international climate talks.

V – A trigger for Copenhagen?

While encouraging, the emissions reduction target defined by the US is considered far too weak by Europe and emerging countries. The move by itself is thus unlikely to unblock UN climate talks. In this context, we still consider it unlikely that the EU will strengthen its 2020 reduction commitment from 20% to 30%.

■ Climate science: things look even worse than expected...

We estimate that the challenge and the need to act is now well recognised by governments across the globe. Recent scientific findings tend to highlight how urgent a policy response is.

The Intergovernmental Panel on Climate Change (IPCC) released its Fourth Assessment Report in 2007. In the years since then, many scientific reports have been published, many of which are relevant to policy decisions that will be made before the next IPCC assessment, due in 2014.

Among new scientific insights, we note:

- The link between fossil fuel emissions and many aspects of climate change is increasingly clear. Indeed human-induced climate change affects multiple systems, both physical and biological, in polar temperatures, global precipitation trends, the hydrological cycle of the western United States, atmospheric moisture content and hurricane formation in the Atlantic and Pacific Oceans.
- Ocean acidification severely threatens marine ecosystems and fisheries (155 scientists declared that ocean acidification threatens the world's coral reefs, shellfish, and marine ecosystems generally).
- A better understanding of the behaviour of large ice sheets, combined with observations of rapid melting, have raised projections for the rise in sea level in the 21st century (between 0.2m and 0.6m forecast in 2007, and from 0.5m to 2m more recently). Antarctic ice shelves are collapsing more rapidly than expected. Arctic sea ice is also melting more quickly than projected.
- Permafrost is thawing more quickly than previously thought (risk of a release of methane into the atmosphere).
- The effects of climate change may persist for more than 1,000 years, even after human-induced emissions of CO₂ stop completely.
- Unmitigated CO₂ emissions will likely generate greater warming than previously estimated.

■ ...but climate plans fall short of the climate stabilisation pathway

Once summed up, we find that the reduction targets proposed so far by parties of the UN Framework on Climate Change fall short of:

- The 25-40% emission cut that must be accomplished by developed countries by 2020, as stated by the IPCC and included in the Bali Roadmap;
- The climate stabilisation pathway defined in an attempt to limit global warming to +2°C by 2100.

The need to act is now
broadly recognised...

...and recent scientific
data further stresses
the urgency...

...but political
proposals fall short of
scientific
recommendations

**US proposal too weak
for rich countries to
fulfil the 25-40% cut
required...**

The US position makes the pledge of a 25-40% cut unachievable...

At the Bali UN conference, the objective assigned to rich countries of cutting their greenhouse gas emissions by 25 to 40% by 2020 compared to 1990 levels was included in the Bali roadmap text, which framed the negotiations around a target of developing a renewed climate pact at the Copenhagen meeting in December 2009.

This figure is currently the full focus of negotiators' attention and blocks any progress in the positions of parties, since current proposals by developed countries point more to a combined 10% cut.

As the US accounts for ~40% of GHG emissions of developed countries and its "best" objective is a 7% cut in greenhouse gas emissions by 2020 compared to 1990 levels, we estimate that developed countries – as a group – simply cannot come to the negotiation table with an overall objective within the scientifically recommended 25% to 40% range.

Even assuming that Canada and Japan may toughen their reduction targets to present an effort (compared to 2005 levels) similar to the EU's 30% option, the US would have to double its currently proposed reduction effort (-40% instead of -20% by 2020, compared to 2005 levels) to allow rich countries' combined objective to merely reach a 25% cut.

The 40% cut requested by China in a position paper published in May ahead of UN climate talks in Copenhagen is out of reach, in our view.

**EMISSION OBJECTIVES BY 2020 PROPOSED BY
DEVELOPED COUNTRIES – IF NO AGREEMENT**

	Emission limit targeted in 2020	Emission cut versus 2005	Emission cut versus 1990
Australia	421	-21%	1%
Canada	577	-22%	-3%
EU-27	4 458	-14%	-20%
Japan	1154	-15%	-9%
Russian Federation	2 994	41%	-10%
Ukraine	738	73%	-20%
United States	6 135	-14%	0%
Total	16 476	-5%	-10%

Source: CA Cheuvreux, UNFCCC

**EMISSION OBJECTIVES BY 2020 PROPOSED BY
DEVELOPED COUNTRIES – IF AGREEMENT***

	Emission limit targeted in 2020	vs. 2005	vs. 1990
Australia	396	-25%	-5%
Canada	577	-22%	-3%
EU-27	3 900	-24%	-30%
Japan	1 154	-15%	-9%
Russian Federation	2 827	33%	-15%
Ukraine	738	73%	-20%
United States	5 685	-20%	-7%
Total	15 278	-12%	-16%

* or best proposal

Source: CA Cheuvreux, UNFCCC

**...thus blocking
negotiations with
emerging countries**

All rich countries already propose a reduction objective at least equivalent to the one proposed by the White House, both relative to 2005 and 1990 levels.

Therefore, unless the US proposes more, the countries that have put "increased targets" on the negotiation table in the case other developed countries also commit to "ambitious" reduction targets, are likely to be reluctant to activate this option, in our view. This is valid for the EU, whose option to raise the reduction target from 20% to 30% is subject to a full legislative co-decision procedure. We reiterate our view that the **20% reduction scenario for Europe remains more likely**. Our long-term CO₂ price forecast (EUR30/tCO₂) is based on this scenario.

**EU seen unlikely to
trigger its 30% cut
option**

...which calls into question the +2°C stabilisation pathway

The US administration has not embraced the EU objective of limiting global warming to +2°C and the associated stabilisation pathway (notably referring to 25-40% cuts required in rich countries).

Adaptation theme would be strengthened if the world agrees to concede 1 more degree to global warming

Current objectives (if respected) would put the world on a path to a +3°C rise in average global temperatures (concentration of CO₂-eq. stabilising at 550ppm). According to scientists, this would open the door to additional climate change effects (e.g. loss of coastal wetlands, higher risk of species extinction, and abrupt shifts in the climate system).

DIFFERENT STABILISATION PATHWAYS PROPOSED BY THE IPCC

Scenario	Parties	2020	2050
+2°C (450ppm CO ₂ -eq)	Rich countries	-25% to -40%	-80% to -95%
	Emerging	Substantial deviation from baseline	Substantial deviation from baseline
+3°C (550ppm CO ₂ -eq)	Rich countries	-10% to -30%	-40% to -90%
	Emerging	Deviation from baseline	Deviation from baseline, especially in Latin Am. and Middle East
+4°C (650ppm CO ₂ -eq)	Rich countries	0% to -25%	-30% to -80%
	Emerging	Baseline	Deviation from baseline in LatAm, Middle East, East Asia

Source: IPCC

RESEARCH & DISTRIBUTION CENTRES

AUSTRIA

CRÉDIT AGRICOLE CHEUVREUX – VIENNA BRANCH OFFICE
5TH FLOOR, OPERNRING 3-5
1010 VIENNA
TEL: +43 1 22 712 70 00
FAX: +43 1 22 712 70 01

BENELUX

CRÉDIT AGRICOLE CHEUVREUX – AMSTERDAM BRANCH
HONTHORSTSTRAAT 9
1071 DC AMSTERDAM
TEL: +31 20 573 06 66
FAX: +31 20 672 40 41

FRANCE

CRÉDIT AGRICOLE CHEUVREUX S.A.
9, QUAI PAUL DOUMER
92400 COURBEVOIE
TEL: +33 1 41 89 70 00
FAX: +33 1 41 89 70 05

GERMANY

CRÉDIT AGRICOLE CHEUVREUX – FRANKFURT BRANCH
TAUNUSANLAGE 14
D-60325 FRANKFURT AM MAIN
TEL: +49 69 47 897 100
FAX: +49 69 47 897 530

GREECE

CRÉDIT AGRICOLE CHEUVREUX - ATHENS BRANCH
1 KORAI STREET (3RD FLOOR)
10564 ATHENS
TEL : +30 210 373 4000
FAX: +30 210 373 4001

ITALY

CRÉDIT AGRICOLE CHEUVREUX ITALIA SIM S.P.A.
VIA BRERA 21
20121 MILAN
TEL: +39 02 80 62 83 00
FAX: +39 02 86 46 15 70

SPAIN

CRÉDIT AGRICOLE CHEUVREUX ESPAÑA S.V. S.A.
PASEO DE LA CASTELLANA 1
28046 MADRID
TEL: +34 91 495 16 48
FAX: +34 91 495 16 60

SWEDEN

CRÉDIT AGRICOLE CHEUVREUX NORDIC AB
REGERINGSGATAN 38
10393 STOCKHOLM
TEL: +468 723 5100
FAX: +468 723 5101

SWITZERLAND

CRÉDIT AGRICOLE CHEUVREUX – ZURICH BRANCH
BAHNHOFSTRASSE 18
8001 ZURICH
TEL: +41 44 218 17 17
FAX: +41 44 212 25 50

TURKEY

CRÉDIT AGRICOLE CHEUVREUX MENKUL DEGERLER A.S.
BUYUKDERE CAD. YAPI KREDI PLAZA C BLOK KAT:15
LEVENT 80620 - ISTANBUL
TEL: +90 212 371 19 00
FAX: +90 212 371 19 01

UNITED ARAB EMIRATES

CRÉDIT AGRICOLE CHEUVREUX – MIDDLE EAST BRANCH
702, 7TH FLOOR, PRECINCT BUILDING #2, THE GATE DISTRICT
DUBAI INTERNATIONAL FINANCIAL CENTRE
P.O. BOX 506611
DUBAI, UAE
TEL: +971 4 428 3600
FAX: +971 4 428 3644

UNITED KINGDOM

CRÉDIT AGRICOLE CHEUVREUX INTERNATIONAL LIMITED
12TH FLOOR
MOORHOUSE - 120 LONDON WALL
LONDON EC2Y 5ET
TEL: +44 207 621 5100
FAX: +44 207 621 5101

DISTRIBUTION CENTRES

JAPAN

CHEUVREUX
CALYON CAPITAL MARKETS ASIA B.V., TOKYO BRANCH
SHIODOME SUMITOMO BUILDING, 15TH FLOOR
1-9-2 HIGASHI-SHIMBASHI
MINATO-KU
TOKYO 105-0021
TEL: +81 3 4580 8522
FAX: +81 3 4580 5534

UNITED STATES

CRÉDIT AGRICOLE CHEUVREUX NORTH AMERICA, INC.

NEW YORK

1301 AVENUE OF THE AMERICAS 15TH FLOOR
NEW YORK, NY 10019
TEL: +1 (212) 492 8800
FAX: +1 (212) 492 8801

SAN FRANCISCO

388 MARKET STREET; SUITE 960
SAN FRANCISCO, CA 94111
TEL: +1 (415) 255 9802
FAX: +1 (415) 307 7782

Copyright © Crédit Agricole Cheuvreux, 2009. All rights reserved

This research report or summary ("Research") has been prepared by Crédit Agricole Cheuvreux or one of its affiliates or branches (collectively "CA Cheuvreux") from information believed to be reliable. The opinions and projections expressed in this document are entirely those of CA Cheuvreux and are given as part of its normal research activity. CA Cheuvreux has not independently verified the information given in this document. Accordingly, no representation, guarantee or warranty, express or implied, is made as to the accuracy, completeness, correctness or fairness of this information and opinions contained in this document or the research or analysis upon which such information and opinions are based. Any opinions or estimates expressed herein reflect the judgment of CA Cheuvreux as of the date the Research was prepared and are subject to change at any time without notice. Unless otherwise stated, the information or opinions presented, or the research or analysis upon which they are based, are updated as necessary and at least annually.

Not all investment strategies are appropriate at all times, and past performance is not necessarily a guide to future performance. CA Cheuvreux recommends that independent advice should be sought, and that investors should make their own independent decisions as to whether an investment or instrument is proper or appropriate based on their own individual judgment, their risk-tolerance, and after consulting their own investment advisers. CA Cheuvreux, its parent companies or its affiliates may effect transactions in the securities described herein for their own account or for the account of others, may have positions with the issuer thereof, or any of its affiliates, or may perform or seek to perform securities, investment banking or other services for such issuer or its affiliates. The organisational and administrative arrangements established by CA Cheuvreux for the management of conflicts of interest with respect to investment research are consistent with rules, regulations or codes applicable to the securities industry. These arrangements can be found in CA Cheuvreux's policy for managing conflicts of interest, available at www.cheuvreux.com. Current research disclosures regarding companies mentioned in this Research are also available at www.cheuvreux.com.

This Research is provided for information purposes only. It is not intended as an offer, invitation or solicitation to buy or sell any of the securities described or discussed herein and is intended for use only by those Professional Clients to whom it is made available by CA Cheuvreux. This Research is not for distribution to Retail Clients. The recipient acknowledges that, to the extent permitted by applicable securities laws and regulations, CA Cheuvreux disclaims all liability for providing this Research, and accepts no liability whatsoever for any direct, indirect or consequential loss arising from the use of this document or its contents.

1. IN THE UNITED STATES, CREDIT AGRICOLE CHEUVREUX NORTH AMERICA, INC. ("CAC NORTH AMERICA") SPECIFICALLY ADVISES THAT IT DID NOT PREPARE, HAS NOT CONTRIBUTED TO, HAS NOT ANALYZED, AND DOES NOT ENDORSE THIS RESEARCH. CAC North America is a SEC-registered broker-dealer, and is not an investment adviser. CAC North America does not manage assets of other entities, CAC North America does not provide investment advice, and CAC North America neither issues nor promulgates reports or analyses within the meaning of Section 202(a)(1) of the Investment Company Act of 1940, as amended. CAC North America is unable to provide any additional information of any sort regarding this Research, and can neither support or refute any of the content, opinions, estimates, or conclusions contained in the Research. CAC North America further advises that this Research is solely intended to be delivered to customers of CAC North America who qualify as "Major U.S. institutional investors" as defined in Rule 15a-6 of the Securities and Exchange Act of 1934, as amended ("CAC North America Customers"). CAC North America Customers are restricted from re-delivering the Research to any other entity, and shall be held strictly liable for any and all costs, legal fees, damages, fines, or penalties resulting from any re-delivery of the Research to persons or entities other than CAC North America Customers. The existence of this Research, or CAC North America's forwarding the Research to certain of its customers, shall not be deemed a recommendation or endorsement by CAC North America of the Research, a recommendation to effect any transactions in the securities discussed herein, or an endorsement of any opinion expressed in the Research.

2. In the United Kingdom, this report is approved and/or distributed by Crédit Agricole Cheuvreux International Ltd (authorised and regulated by the Financial Services Authority ("FSA").

3. In Italy, this Research is approved and/or distributed by Crédit Agricole Cheuvreux Italia SIM S.p.a. (regulated by CONSOB) and is not intended for circulation or distribution either to the public at large or to any other parties other than professional clients and/or qualified counterparties, as defined in Legislative Decree No.58 of 24 February 1998 as amended, and implementing Consob regulations.

4. In the Middle East, this Research is approved and/or distributed by CA Cheuvreux Middle East, based out of Dubai International Financial Centre (DIFC) and regulated by the Dubai Financial Services Authority (DFSA).

5. In Turkey, this document is based on information available to the public. CA Cheuvreux Menkul Değerler A.Ş. has spent reasonable care in verifying the accuracy and completeness of the information presented within the document and cannot be held responsible for any errors, omissions or for consequences arising from the use of this information. The information should not be construed, implicitly or explicitly, as constituting investment advice. This document is not an offer to buy or sell any of the securities discussed herein and has been prepared for the qualified representatives of our institutional investors.

THE DISTRIBUTION OF THIS DOCUMENT IN OTHER JURISDICTIONS MAY BE RESTRICTED BY LAW, AND PERSONS INTO WHOSE POSSESSION THIS DOCUMENT COMES SHOULD INFORM THEMSELVES ABOUT, AND OBSERVE, ANY SUCH RESTRICTIONS. BY ACCEPTING THIS REPORT YOU AGREE TO BE BOUND BY THE FOREGOING INSTRUCTIONS.

The MSCI indexes are the exclusive property of MSCI Inc. ("MSCI"). MSCI and the MSCI index names are service mark(s) of MSCI or its affiliates and have been licensed for use for certain purposes by CA CHEUVREUX. The financial securities referred to herein are not sponsored, endorsed, or promoted by MSCI, and MSCI bears no liability with respect to any such financial securities. The Prospectus contains a more detailed description of the limited relationship MSCI has with CA CHEUVREUX and any related financial securities. No purchaser, seller or holder of this product, or any other person or entity, should use or refer to any MSCI trade name, trademark or service mark to sponsor, endorse, market or promote this product without first contacting MSCI to determine whether MSCI's permission is required. Under no circumstances may any person or entity claim any affiliation with MSCI without the prior written permission of MSCI.

The Dow Jones GCC Index™, or other applicable index, are calculated, distributed and marketed by Dow Jones & Company, Inc. and have been licensed for use. All content of the Dow Jones Indexes™ © 2009 Dow Jones & Company, Inc.

No part of this report may be reproduced in any manner or redistributed without the prior written permission of CA Cheuvreux.