

Post Durban: can community renewables and smart grid brighten a low-margin decade?

Ernst & Young guest columnist – Jonathan Johns

The COP17 agreement in Durban to sign up to an unspecified legally binding treaty by 2020, was welcome but weak.

It did not remove carbon and climate change wholly from the agenda, but it hardly provided an imperative to invest. Indeed, the subsequent withdrawal of Canada, Japan and Russia from the Kyoto Protocol, fresh after the home planes had landed, foretells the difficulties to come.

The 2015 to 2020 negotiations will thus take place at a time when a material increase in global emissions by the new growth economies is likely to have outstripped any reductions in the West, even after any impacts from a recession. Higher rises in global temperatures than the two to three degrees currently contemplated may by then be on the cards – if emerging scientific consensus is accepted.

Post Durban, renewables will need to compete within a wider investment class for funds.

Renewables no longer has the climate change investment arena largely to itself. Forward-looking investment is likely to flow to energy efficiency and climate-affected scarce resources (e.g., water infrastructure). In January 2012, the Chinese Investment Corporation placed its first significant investment in the UK, with a 9.9% stake in Thames Water. This followed a similar investment a month earlier by the Abu Dhabi investment authority, the latter having already invested in the London Array offshore wind farm through Masdar.

Post Durban, carbon trading will not bank the renewable investment challenge.

Largely due to the impact of continued recession and the euro crisis, carbon prices in Europe could well struggle to get materially beyond current low levels of €7/tonne to €8/tonne (for European Union Allowances – EUAs) unless a reserve price is adopted, as some parties are suggesting. In addition Certified Emissions Reduction certificates – carbon credits based on emissions-reduction projects in the developing world – fell to €3.28 per tonne on the EU Emissions Trading Scheme (ETS) last week, half the price of European Emission Allowances, which are themselves near historic lows. This has had the side effect of reducing European funds available for investment in clean energy sourced from carbon credit sales budgeted at higher levels.

By turning away from setting a global carbon price, Durban has pushed the spotlight back to individual countries' domestic support mechanisms. Investment in renewables in the poor developing world is likely to be left in limbo and at the mercy of flagship funds, such as the Durban fund whose announcement, while welcome, was not accompanied by concrete and immediate funds.

In the West, the political imperative has moved more to financial housekeeping and away from the inconvenience of climate change.

The continued recession is acting as a brake on policy intervention, as 'renewables-friendly' stimulus measures are not always renewed and their perceived generosity is challenged. Concerns about the impact of rising energy prices on industry costs and fuel poverty are already having an impact on policy-makers. However, the fact that investment today reduces exposure to rising fossil fuel prices tomorrow does still strike a chord.

"Delaying action is a false economy: for every US\$1 (€0.8) of investment avoided in the [renewable/low carbon] power sector before 2020, an additional US\$4.3 (€3.3) would need to be spent after 2020 to compensate for the increased emissions."
World Energy Outlook 2011, IEA.

Witness also the UK's low carbon roadmap to 2050, which makes clear that a fossil fuel strategy is very much the most expensive option.

Such arguments pose challenges to more and more Governments, as their immediate investment firepower is constrained, if not neutered, by excessive levels of sovereign debt and, in terms of targets, 2050 is discussed with greater interest as it becomes increasingly possible that 2020 targets will not be met.

The sovereign debt crisis has also renewed pressure on the European banking sector.

Historically a global anchor for renewables project finance, the European banking sector has reduced capacity to lend and has frozen loan portfolios. New lending, with a few exceptions, is restricted to strong sponsors selected from existing (often domestic) customer relationships. This puts further pressure on Governments to provide financial support through vehicles such as the European Investment Bank (EIB) and the Green Investment Banks or loan guarantees, although this is unlikely to arrive in the volume required.

The UK's very welcome Green Investment Bank initiative illustrates the dilemma, as its ability to borrow will only come into play once certain Government debt targets have been reached. With the prospect of further recession, these targets could become more distant.

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The heat is on the renewables sector to deliver on the basis of value per carbon tonne saved and not just MW of capacity installed as Governments have their eye on the impact of rising energy prices on their electorates and on the fuel poor.

In Spain, the impact of the credit crunch has been graphically illustrated with new renewable schemes suspended.

Spain first reduced support for renewables in September 2008 as a means of dealing with its tariff deficit which, around May 2009, had reached €14b, not only because of support given to renewables through generators electing to take market exposure through its cap and collar premium tariff system, but also due to the below market last resort tariffs granted to some five million low income households. The intention had been to securitize debt to remove tariff deficits from utilities' balance sheets on the basis of Government guarantees and future tariff increases, but the credit crunch reduced markedly the ability to issue such debt and the euro crisis recession has made tariff increases difficult.

By the end of 2011, the tariff deficit had ballooned to €24b, with further increases of €3b to €4b anticipated in 2012. Consequently, the Spanish Government has ceased all new renewable support overnight while a solution is investigated. The outcome at best is likely to be further tough reductions in tariffs with a battle between wind and solar. This situation illustrates the difficulties faced when aspiration and affordability part company, with premature booms unhelpful to the long-term development of the industry if they are followed by sudden 'shock busts.'

In microcosm, similar issues are behind the determination of the UK Government to hold to its solar PV tariff reductions by making successive court appeals following rulings that retrospective change was unlawful. It has also proposed further cuts combined with an automatic downward adjustment mechanism.

Even in Germany strong debate is taking place over proposals that solar PV capacity should be the subject of a 1GW limit (compared to in excess of 7GW installed last year) as well as a further downward monthly price adjustment.

Notwithstanding President Obama's supportive State of the Union address, and recent budget request for increased funds to allow the renewal of the PTC, further treasury grants and continued support for cleantech manufacturing, implementation of these measures before the presidential election, is in doubt. This is critical as the combination of the Treasury Grant programme with the PTC has created a support regime as attractive as a FIT, underpinning the high ranking of the US in the CAI.

For industry, it is no consolation that the pre-presidential election PTC renewal ritual has recurred, as delay has invariably had detrimental effect. High-profile utility investors, such as Iberdrola, have already announced a moratorium on new development activity and manufacturers, such as Vestas, are warning of plant closures in wind, to follow on from those in the solar sector.

As policy priorities in most Western jurisdictions shift to the general economy with less emphasis on cleantech and renewables, challenges from low-cost Asian producers have proved difficult to counter – so much so that protective tariff arguments are starting to re-emerge (in the US and elsewhere).

Legislators are building policy predicated on steady falls in technology prices.

As grid parity approaches, automatic downward adjustment to tariffs in circumstances of excess demand and/or annual capacity quotas may well become the norm. Some jurisdictions may switch to a tendering process that in Brazil has seen onshore wind compete head to head with gas.

For example, the UK Government's response to consultation on its new large-scale contract for difference FIT indicates that, while for the present it accepts that it should set prices, it reserves the right to move toward a more tendered approach as 2020 nears.

In the US, the challenge of grid parity is made harder by plentiful shale gas, which has reduced gas prices to circa US\$3/mmBtu (€2/mmBtu) in 2011 (US Henry Hub prices), making the renewal of the PTC even more necessary if wind is to compete. This challenge could be exported as permissions have been sought to convert US LNG ports to be bidirectional so they can access higher price overseas markets (with gas in Europe at circa US\$12/mmBtu (€9/mmBtu) and Asian circa US\$18/mmBtu (€14/mmBtu)).

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These challenges overshadow the New Year announcements that a record 27.7GW of global solar PV were installed in 2011 (up from 16.6GW in 2010, source: EPIA), and a 33% increase occurred in US wind installations to 6.8GW, according to the American Wind Energy Association (AWEA).

A process of Darwinian selection is under way and could well be brutal both for Western and Asian manufacturers as we go further into a low-margin decade.

It seems inevitable that increased market share will flow to Asia, although these manufacturers are increasingly likely to set up partial assembly in the West using the financial firepower of their banks and infrastructure funds to assist; as seen by recent Chinese investments in the US and Europe – and Korean player **Samsung's** announcement of the manufacture in the UK of its 7MW offshore turbine.

Consolidation may well be a necessary stage for the industry to come of age and to enable it to reduce prices still further.

Utilities which are themselves cash constrained in many cases will need to access further monetary flows from Asia or sovereign funds. This is evidenced by EDP, which has recently received a 21% investment by China's Three Gorges Corporation accompanied by a large package of financing – following Iberdrola's earlier strategic partnership with Qatar Holding and E.ON's relationship with Masdar.

As equity markets recover, it may well be that direct stock exchange floats of utility-independent large offshore and onshore wind portfolios occur, recalling the days when excess capital from Western manufacturing in the 19th century was recycled into infrastructure projects on a global scale. The partial float of utilities renewables subsidiaries has not always been successful, with buybacks occurring when share prices dropped as downward regulatory and shale gas pressures emerged. What is needed is a genuinely separate quoted sector for renewables – which may not be possible until something closer to grid parity is achieved so that investors are less concerned about regulatory risk.

Further work is required in bond markets to ensure confidence lost by the downgrading of previous renewable issues is regained. This is likely to mean less aggressive gearing, partial recourse, and using conservative base cases with high margins of comfort.

On the smaller scale, it is time for renewables to reconnect with its community roots – when combined with smart grid, the potential is huge.

Even now, a very high percentage of onshore wind capacity in Germany and Denmark is owned by local communities. Partly borne from the now defunct tax breaks for doctors and dentists, local ownership was the driving force that created the industry and which has been reflected in the huge take-up of rooftop solar in Germany.

In the UK, there are early signs of a resurgence in community renewables and the Government has allowed a tax break to be retained for the sector – provided formal community investment structures are followed. In the US, the PTC is itself a tax shelter investment and although detractors debate the cost of it to the Treasury, it is usually the case that such funds find alternative ways to avoid the exchequer.

It will be instructive to see whether this resurgence, which is reflected in grass roots community schemes worldwide, builds into a movement with real economic affect. In North America the over subscription of Nova Scotia's Community Feed-in Tariff (COMFIT) projects, accessible by municipalities, First Nations, cooperatives and not-for-profit groups, indicates that there is considerable latent demand to be tapped.

The possibility is that utility-scale renewable projects may in time be complemented (if not overtaken) by localized renewable energy (electricity and heat) schemes coupled with smart meters, energy efficiency retro-fit, electric vehicle and demand management initiatives. This community energy virtual circle may come to fruition only if utilities and large IT players in many jurisdictions become active participators in its development – even though it challenges centralized models.

For example, in the Isle of Wight (UK), IBM Toshiba, SSE, Cable and Wireless and Silver Spring Networks have engaged through a community interest company, Eco Island, to deliver a smart energy network. In Austin, Texas, the Pecan Street project is using stimulus funding and the municipal-owned utility to pioneer smart grid techniques in the US. The Japan smart community alliance's level of ambition is indicated by a number of domestic demonstration projects, together with international initiatives. Japan's new energy and industrial technology organisation (NEDO) is building a smart grid on Hawaii's Maui island, and a project in New Mexico.

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The challenge will be to achieve genuine local community participation in both smart grid and renewables – in such a way as to avoid the concerns recently expressed by the UK Parliament's Public Accounts Committee that poorly executed smart metering programs could increase costs for the fuel poor.

There is a big prize to aim for: democratizing renewable energy through more local ownership will mean that consumers become producers. This offers the prospect that local businesses (large and small), hospitals and schools, as well as the domestic sector, enter into arrangements whereby their power and heat is sourced locally (e.g., from waste to energy schemes, biomass boilers, PV panels and if suitable wind and hydro).

Such schemes also allow energy efficiency retro-fits to occur if facilitated by innovative schemes such as the Green Deal in the UK – which is to use utility bills as the means to collect payments rather than adding loans to mortgages (as occurred with the criticized US PACE scheme). These community schemes build an indigenous low carbon capital base, providing for genuine local involvement and jobs rather than the disbursement of funds to external providers through conventional remote energy production. They also have the advantage of rebuilding political influence for the sector that could lose popular support if increasingly strident stand-offs between industry groups and regulators in many Western jurisdictions get out of hand.

New businesses are emerging to provide these services both locally and at scale and, from the politicians standpoint the good news is that associated jobs are less easily exported.

As always, one of the challenges is funding and changing regulatory practices designed for a more centralized system.

It is suggested that legislators cheerfully look to tax breaks to encourage investment. In this way, the rate of build-out is controlled by the extent of participation. This is not to say that FIT or other support measures can be wholly dismantled, but because such projects tend to consume electricity at the point of generation, they do bring forward the time at which grid parity is reached due to investment decisions being at the retail rather than wholesale price of electricity.

In New York State, legislation has been passed allowing 'remote net metering' for farm-based and non-residential customers generating electricity from solar, wind and farm-based biogas systems. This means that power produced at one location can be offset against bills on properties under the same ownership in another location – if within the same utility zone, subject to output limits.

If remote net metering were applied to large-scale renewable plants transmitting renewable electricity across national grids, the energy market could be transformed. Generators could sell direct to customers paying only for transmission and balancing, with customers able to claim carbon offset in the US (by surrendering the REC, but not the PTC). However, this is not a viable option at present in the UK, for example, where the ROC certificates would have to be surrendered to avoid Carbon Reduction Commitment (CRC) obligations and thus tax – arguably a restriction that should be removed as such surrender is uneconomic, being the equivalent of the PTC and REC combined. Removing bureaucratic obstacles to such policies would also allow high-energy users dependent on fossil fuel plants, to remotely source renewable energy at more cost-effective rates – potentially preserving jobs and facilitating the transition to a low carbon economy by Western economies.

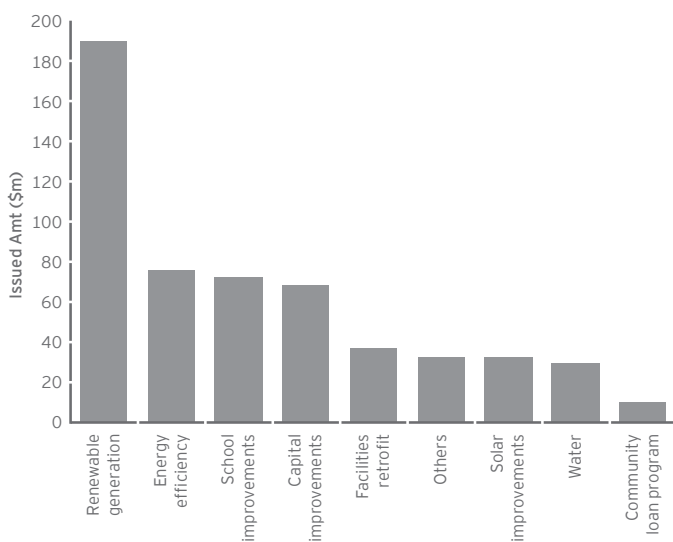
One particularly interesting finance mechanism is the tax-exempt mutual bond, which has long been used in the US. Under this arrangement, qualifying community entities are able to raise funds by way of bonds to investors that may only have recourse to project income streams, and receive tax-free interest or, more recently, on the basis that the issuer reclaims a tax credit based on a proportion of that interest cost. The advantage of such schemes is that support is confined to the tax revenue foregone on interest rather than being a tax credit on the whole capital cost or a straight cash grant. It is therefore a relatively cheap source of finance if issue costs are kept low: but as a nudge mechanism, it is dependent on local initiative for take-up.

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In the US green stimulus package, over US\$3.2b (€2.5b) of qualifying energy conservation bonds (QECBs) and US\$2.4b (€1.9b) of clean renewable energy bonds (CREBs) were allocated. In the case of QECBs as of November 2011, 85 projects totaling over US\$545m (€421m) had been funded in 21 states leading to some commentators expressing disappointment at the low rate of take-up. (See figure 1 and figure 2 below for the total volume and apportionment of the funds by sector) Data for CREBs is less publicly available for comment and both programs remain open. QECBs are a nudge mechanism and reasons for there being a low take-up could include municipality borrowing limits, the costs of issue associated with small projects, or lack of investor appetite in current economic circumstances. In states with a strong association with renewables, such as California, take-up to date has exceeded 60%.

The volume and diversity of projects funded is interesting. One of the challenges for this type of scheme in other jurisdictions will be to keep costs down and to ensure that procedures are simplified. The use of tax-exempt bonds could well complement initiatives (such as the Green Investment Bank and climate bonds), allowing localism to influence the volume of projects put forward. This should also allow investor appetite to regulate the take-up – without affecting public sector borrowing requirements if recourse is solely to projects.

Figure 1: Total volume of QECBs funding

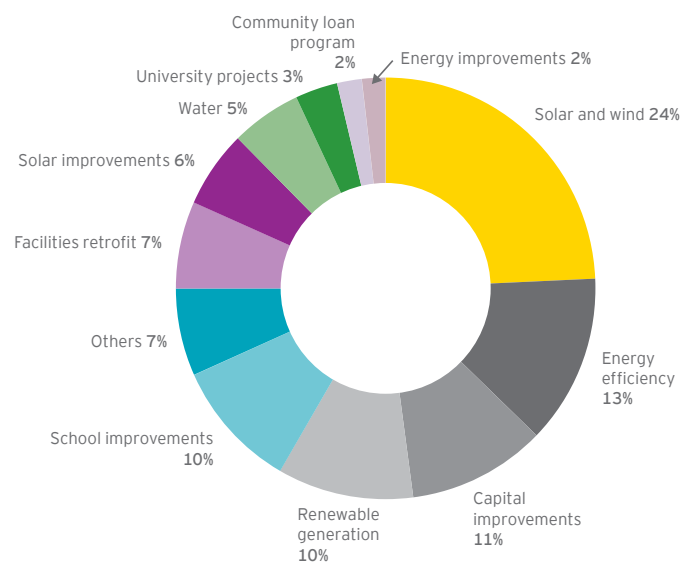


Source: EPC

But what of the developing poor? At the Durban climate change conference in December, negotiators launched the Green Climate Fund, announced at COP15 in Copenhagen, which aims to channel US\$100b (€77b) of finance to developing nations to help mitigate and adapt against the worst impacts of climate change. However, the finer details of the fund, such as sources of funds, host country, trustees and existing balance, are still to be agreed.

It would be good if, in today's strained circumstances, more room could be created for Green bonds, building on the US\$7b (€5b) issued to date by the World Bank, EIB and other issuers, largely taken up by Swedish and Japanese investors. Unfortunately, in the current economic circumstances, the rate of issue of World Bank bonds has slowed considerably. Would it be too much to ask (as a practical measure) that all those who attended Durban agree post event to treat income received by their citizens or corporates from World Bank green bonds meeting standards such as those in the Climate Bond initiative to be tax exempt? This could become an active platform to raise funds to invest in projects to benefit the developing poor – a global nudge mechanism to complement the Durban fund.

Figure 2: Proportion of QECBs funding by sector



Source: EPC