

CCS: IMPLEMENTATION OF EU ETS NEW ENTRANT RESERVE FUNDING

A Draft Paper

Prepared by an industry/
NGO group to assist the
European Commission in
its comitology process

BELLONA
EUROPA

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30 April 2009

This draft paper represents the views of ten industrial firms and NGO's (Alstom Power, BP Alternative Energy, The Bellona Foundation, Climate Change Capital, E3G (Third Generation Environmentalism), Enel, European Climate Foundation, Shell Intl Petroleum Co Ltd, RWE Power and Vattenfall. All these organisations give their broad support to the conclusions and recommendations of this Paper, though there are minor differences in their stances on certain of the matters addressed. The lead author of this Paper is David Gye.

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1. Overview and Conclusions

1.1 The Brief

This draft paper addresses the deployment of the NER, mandated under the Directive¹, and in particular its application to the funding and implementation of the EU CCS Demonstration Programme. It represents the views of ten industrial firms and NGO's² working together over two weeks in April 2009. It is prepared as a draft that is intended for endorsement in a revised final form by a wider group of organisations during May 2009, and hopefully by all those that are represented in the ETP-ZEP. Meanwhile, it is offered to the European Commission to assist its immediate internal processes, and not for publication. Our provisional conclusions are summarised below.

1.2 Timing and Process

- a. A staged and flexible process should be implemented to ensure that the great majority of projects are funded in time credibly to target completion by 2015; a definitive outer time limit for project completion targets should be established.
- b. The staging should start with a call for prequalification submissions within 2009, leading to selection of a short-list of a few well-prepared "First Award" projects; negotiation with these projects and their Member State supporters should lead to funding award and Final Investment Decision by the first half of 2011.
- c. From the same prequalification a short-list of promising projects earlier in their development should be selected as potential candidates for "Second Award", intended to make up the bulk of the CCS and RES portfolios.
- d. Those Second Award candidates that pass through a competitive preliminary negotiation should be mandated to undertake FEED studies, either on the basis of a definitive pre-FEED selection or of a limited further competition post-FEED.
- e. It is likely that some public funding for FEED for unselected projects would be needed, though Project Developers would in principle be expected to share this cost.
- f. Final funding bids and negotiations (in which Member States would participate) should result in FID and a Second Award of funding in the first half of 2012, the majority of these projects being completed by 2015.
- g. By 2011 the value of the NER Pool will be more secure and if there is both the capacity and the need, proposals for Additional Projects may be solicited, competed and funded, though they would not be likely to achieve completion by 2015.

¹ Please see Section 2 below for definitions

² Alstom Power, BP Alternative Energy, The Bellona Foundation, Climate Change Capital, E3G (Third Generation Environmentalism), Enel, European Climate Foundation, Shell Intl Petroleum Co Ltd, RWE Power, Vattenfall. All these organisations give their broad support to the conclusions and recommendations of this Paper, though there are minor differences in their stances on certain of the matters addressed. The lead author of this Paper is David Gye.

- h. Process design, solicitation, selection, negotiation and award will be complex and will place a heavy burden on Commission staff; we recommend the early engagement of qualified advisers to assist in the process.

1.3 Maximising NER Value

- a. The current low value of Allowances is a concern for the value of the NER Pool; while there is some optimism that later in Phase 3 Allowance values will rise, that is not reflected in the forward market today, and may still not be reflected by 2011.
- b. An underwriting of a future Allowance price at a higher value than forward market prices will represent a value contribution by the underwriter.
- c. Certainty as to the value of the NER Pool together with accompanying contributions from other parties is likely to be needed by the end of 2012 to allow the whole CCS Programme to be implemented in an acceptable timeframe.
- d. Some parties – Project Developers, the EIB and perhaps most likely Member States – may be stimulated by competition to make an effective value contribution to projects by underwriting future Allowance values at above market rates; this should be encouraged and we have developed process that does so.
- e. Under the process a number of Allowances either bid directly, or having a market value of the allocated funding, are placed in trust for each project on the date of FID; the project may request monetisation by an auction at that date, or at a later date of its choosing.
- f. The trust procedure facilitates underwriting contributions while allowing certainty of value to those not prepared to contribute in this way; it would include provisions to cap value against the risk of windfall profits and ensure that project performance risk remains with Project Developers.

1.4 CCS and Eligible Renewables

- a. The NER Pool should not be split ex-ante between CCS and RES; nor should the Commission rely on some kind of project by project competition for allocating funds.
- b. The CCS Programme is mandated and crafted with a clear scope and objectives to demonstrate certain essential technologies at a particular stage in their development life cycle; a similar targeted programme should be prepared urgently for RES.
- c. The RES target and Programme should be prepared on a basis that looks at essential demonstration needs not currently funded; preparation should not be allowed to hold up allocation of the NER.
- d. With two portfolios that have parallel demonstration aims it will be possible to select projects for inclusion in each on the basis of their potential contribution to the objective.
- e. There will be competition among projects for inclusion within each portfolio, on the basis among other matters of cost; but direct competition between a CCS and a RES project would not be meaningful.

- f. A common set of threshold criteria for CCS and RES should be formulated with respect to demonstration size, development status and other matters; we present our proposals.

1.5 Member States – Funding and Relationship

- a. Member State funding will be vital to the success of the CCS and RES Programmes; the NER Pool is not large enough to fill the need for public sector support and Member States will need to be invited to play a major role.
- b. Member States should be encouraged to contribute in the form of cash contributions or by other means such as the underwriting the future value of Allowances.
- c. In assessing project funding bids, Member State contributions should be considered as separate from those of the EEPR and the NER; minimising these two together should be the basis for any financial competition among contending projects.
- d. The primary formal relationship in the competition, negotiation and allocation of NER funding should be between Commission and Project Developer, but in reality the importance of Member State funding means that negotiations will be triangular among the three parties.
- e. To ensure a geographical spread across the EU the Commission should formulate explicit funding limits or allocations, for example to Member States with lower per capita GDP's.

1.6 Project Funding

- a. Project Developers should be invited to offer project proposals that bid for a quantum of NER funding to supplement funds to be provided by themselves, EEPR and Member States.
- b. In practice, Member State contributions may well not be known at the time that initial project offers are made; negotiations are likely to be needed to bring the parties to a definitive final proposal.
- c. Project Developers will be required to take the risk of delivering an operating project, and to fund the base cost of the plant; they will be expected through competition also to recognise the expected long-term value of the CCS element of their projects.
- d. EEPR funding will be welcome where it can be delivered by a project selected for NER funding, but for the purpose of price competition it should be considered bundled with NER funding.
- e. Projects should receive NER value at FID, to be monetised at a time of their choosing; this “advance payment” will increase the value of the NER Pool available for allocation, but the Commission must be fully protected by a legally binding and credit-supported clawback provision in the event that operating performance is not met.
- f. Operating performance should be measured and rewarded over a period of five to ten years against an appropriate performance metric (e.g. clean MWh, tonnes of CO₂ stored) which will vary by category and technology of project.

1.7 Project Selection

- a. The task of managing the competition is to compile projects that meet threshold criteria into portfolios that as whole meet the requirements for each of CCS and RES of timing, geography and technology.
- b. There will be choices among eligible projects that should stimulate price competition; the objective will be to compile the portfolios that provide the best overall value for money.
- c. Proposals within a given category will therefore compete on the lowest funding cost (NER plus EEPR) for a role in the portfolio, and in some cases head to head with other proposals that can provide similar demonstration value; projects that are too expensive may be excluded for lack of funds even where they could make a significant contribution to the Programme.
- d. Negotiation can be expected among the Commission, Project Developers and their Member State supporters to reconfigure projects or provide improved offers so as to produce the most cost-effective possible Programmes.

2. Background and References

In March 2007 the European Spring Council gave its support to an EU programme of up to twelve demonstration projects for carbon capture and storage (“CCS”) (the “CCS Programme”)³, to be implemented by 2015 at an estimated cost to the public purse of €6 to €10 billion. The CCS Programme was conceived and designed on the basis of recommendations by ZEP⁴ in 2007; in November 2008 ZEP presented its further recommendations⁵ to the European Commission on the broad guidelines for implementing the CCS Programme.

In December 2008 the European Parliament and the Council adopted the review of the Emissions Trading Directive⁶ (the “Directive”), which among its other provisions envisages the award of 300 million EU emission Allowances (“Allowances”) from the New Entrant Reserve (“NER” and “NER Pool”) to CCS and certain classes of renewable energy (“RES”) projects.

A comitology process among the European Parliament, the Commission and Member States is now in train under the direction of DGEnv to develop a Draft Regulation on the administration of the NER. DGTrEn has an interest in this process as an observer, given that is the sponsor of the CCS Programme. This Paper is designed as a contribution to that comitology process and is prepared in response to several specific questions raised by Commission staff.

At the same time the European Energy Programme for Recovery (“EEPR”) has been mandated in terms that allocate over €1 billion to certain preselected CCS demonstration projects, to be committed by December 2010. Where such a project is selected on its merits for funding from the NER Pool, it is proposed that the amount of Pool funding will be discounted by the amount of the EEPR contribution. The currently assumed terms of reference of the EEPR, still subject to development, are given in a note (“EEPR Note”) dated 20 March from the Presidency to the European Council.⁷

³ [Presidency Conclusions, Brussels European Council 8/9 March 2007](#), (Council of the European Union 7224/1/07). CCS policy in Annex I, Section V, p.22.

⁴ European Technology Platform for Zero Emission Fossil Fuel Power Plants, an advisory body working with the European Commission and representing industry, NGOs and research organisations.

⁵ [EU Demonstration Programme for CO₂ Capture and Storage \(CCS\) – ZEP’s Proposal](#), November 2008 (“ZEP November 2008 Submission”)

⁶ [European Parliament legislative resolution of 17 December 2008 on the proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community \(COM\(2008\)0016 – C6-0043/2008 – 2008/0013\(COD\)\)](#)

⁷ [Presidency compromise proposal for financing of the infrastructure projects put forward by the Commission as part of the EERP](#), 7848/1/09 REV1

3. Timing and Process

The timing and process for allocating the NER Pool must consider not only best value for public money, and the Parliament's and the Commission's processes, but also the needs of industry. In respect of the CCS Programme, projects must be developed to the point of Project Sanction, or a Final Investment Decision ("FID"), in time to target a 2015 operational date; we assume that RES projects can be expected to have a similar target date.

3.1 Earliest Date for Commitment of NER Funds

We expect that auctioning of Phase 3 Allowances will start at some time in 2011. The Directive makes it clear that⁸ it should start no later, and the completion date of the comitology process makes it impracticable for it to start any earlier.

As we discuss in Section 4.6, we consider it essential that projects to be funded have the opportunity to be certain of the market value of their NER Pool contribution at the time of FID; this requires that there is an active auction market at that time. A reliable nonbinding indication of the NER Pool contribution is also needed at the start of negotiation with Project Developers⁹, which may be 12 to 24 months earlier. A 2015 completion target for CCS Projects therefore implies a need for a presumption of NER Pool value very soon, before auctions are possible.

We are hopeful that the bulk of projects should achieve FID in time to meet a 2015 commissioning date, but the Commission may well have to accept that some useful projects cannot; some modest measure of delay may be acceptable where the alternative is that the portfolio would be incomplete. For those projects, high confidence in the NER Pool value will be needed in about 2012, with certainty to follow soon after.

3.2 Project Development Phases

The phases by which a project is developed are an important determinant of the timing and process for allocating of NER funds. They are shown in Figure 1.

- a. The **Preliminary Development** phase is proceeding for many candidate projects now. It can be very long and the longer it is, generally, the more expensive. Project Developers will expect to bear the costs of Preliminary Development at their own risk for any project they promote.
- b. **Final Development** is a much better defined, if more expensive, process culminating in FID, when all the financial commitments needed to complete the project (including Project Developer and NER funding) are definitively undertaken. A major activity in the Final Development phase is a front-end engineering design study ("FEED"). While its definition and scope varies

⁸ (*Preamble Item 20*) states that auctioning of Allowances for 2013 should "start by 2011 at the latest and be based on clear and objective principles defined well in advance" and (*Article 9*) that "the Commission shall, by 30 June 2010, publish the absolute Community-wide quantity of allowances for 2013"

⁹ We use "Project Developer" to mean the industry entity or consortium (which may include financial participants) that promotes, plans, develops, funds, builds and operates a project in either the CCS or RES portfolios. In the case of CCS, the Project Developer takes responsibility for the delivery of the entire project, including the base plant, capture, transportation and storage.

considerably, embarking on FEED is usually a threshold decision, undertaken when there is high confidence that the project can proceed.

Because the definitions of the transition into Final Development vary among developers, it is hard to state how long a “typical” Final Development takes; but when it has been decided upon, timing is usually more certain than for Preliminary Development. Project Developers are generally ready to carry Final Development costs, principally those of FEED, at their own risk, provided that the project has secured in principle its full construction funding, to be finally committed at FID. But where projects are still in competition for selection, sponsors are reluctant to accept the very high costs of Final Development at their sole risk. We discuss at Section 3.3 below the options for handling FEED in a competitive situation.

Figure 1 – Generic Project Development Stages

	Preliminary development	Final development	Construction and commissioning	Learning
Activities	Project concept and economics; permitting and location studies; form sponsor and supplier groups; outline financing plan and sourcing	Complete FEED, tender packages, final permits, site acquisition, definitive financing	Detailed design, construction, and commissioning	Improvement of the initial project
Milestone	Project development agreement and decision to fund and start FEED	FID – commitment of all parties and award of all contracts	Technically complete and delivery of performance obligations	Continuing project improvement
Cost	€ single figure millions	€ several tens of millions	€ hundreds of millions	Costs covered by revenues
Time	18-24 months +	9-18 months	36-48 months	Ongoing

- c. The **Construction and Commissioning Period** may vary a great deal from project to project. Project completion is a critical date, as it triggers the beginning of the period when proof of performance, starting with completion tests, allows public sector funding to become unconditional. In the nature of projects with a demonstration element it will be difficult to ensure that the completion deadline is met, but we would expect that (a) at the time of FID a credible timeline should show how the target would be met and (b) there will be strong financial incentives for timely completion. (It may well be that the desire to begin earning a return on the very high capital investment that Project Developers will have made will be enough incentive on its own).
- d. The **Learning Period** recognises that, particularly for these first of a kind projects, there are likely to be continuous plant enhancements as operational experience is gained. This is likely to be relatively intense in the early years of operations, but continue at some level throughout the life of the plant. It is expected that these enhancements will be self-funding through performance enhancements as a result of their implementation, but the scheme by which public

funding becomes unconditional should be designed to encourage such improvements.

3.3 FEED

The FEED study is the major element of the Final Development process of a project. While its scope will vary from industry to industry, its objective is to demonstrate technical feasibility and reduce the cost risk from something in the region of +/-30% to +/-10%. For CCS the FEED will have to include the entire carbon capture, transportation and storage chain, and will be an expensive exercise that may take a year or more.

The risk of undertaking an offering and award process for projects before FEED has been completed is that the cost estimates will be so unreliable that the award may become invalid as the FEED develops, or that financial offers by Project Developers are very expensive so as to lay off the unknown cost risk.

On the other hand, waiting until FEED has been completed requires perhaps a year's delay before project awards can be made, and a large expenditure on work that may be abortive. While Project Developers have been ready to undertake FEEDs in a competitive environment, it is unusual, and it is significant that none of the three current formal CCS Demonstration competitions worldwide¹⁰ have demanded this of competitors. In all these cases FEED costs for all projects, selected or not, are met as a public sector cost either because winners are selected pre-FEED (US, Alberta), or via the public funding of multiple FEEDs for prequalified projects (UK) .

We recommend that except for those candidate projects that have already committed to FEED studies, project selection and development proceed via a cooperative partnership between the Project Developers and the public sector funder, jointly working to ensure the delivery of the CCS projects. An important element in the funding organisations' selection decision is their confidence in the commitment and competence of the Project Developers to follow through and deliver the project.

The process we propose below (Section 3.5) suggests that only a limited number of projects is taken forward to the FEED study stage so as to limit costs (and industry resources for this work, which may be stretched). But it is likely that some projects that fail to be selected will have undertaken FEEDs, and there may have to be some level of cost sharing from NER funds for some of these. However, we believe that Project Developers should in principle bear at least some of the cost.

3.4 Staging the Process

Constraints of timing and project development argue for a staged process, in which commitments to some projects are made early on the basis of an estimate of NER

¹⁰ UK, Alberta, US Clean Coal. Further data on these competitions, to which we have referred in developing our recommendations, are available from the following sources:

- **Alberta:** Department of Energy [Carbon Capture and Storage Program, Full Project Proposals Information Package](#), December 2008
- **US:** [Financial Assistance Funding Opportunity Announcement, Clean Coal Power Initiative Round 3. Funding Opportunity Number: DE-PS26-08NT43181](#). August 11th 2008, with subsequent amendments.
- **UK:** The European Commission approves UK aid for the front end engineering and feasibility studies for two post-combustion CCS demonstration projects under EC Treaty state aid rules. <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/555&format=HTML&aged=0&language=EN&guiLanguage=en>

Pool value, while others are awarded when the value is certain. Arguments for staging are:

- a. It will allow an early start to solicitation, and hence a better chance for the bulk of projects to achieve the 2015 deadline.
- b. Staging can largely de-link the project selection process from the timing of Phase 3 Allowance auctions, allowing more flexibility for both activities.
- c. Designing portfolios for CCS and RES on the basis of the projects offered is going to be a very difficult task (see Section 8 below). A staged process will allow the design to develop over time, so that later allocations can focus specifically on the gaps left in the portfolios after early awards.
- d. A staged process will give an opportunity for projects that had not been ready for early solicitation to participate. Depending on timing, it might also allow funds that had been committed to any early projects that fail in development to be released and recycled; this could prevent a loss of valuable NER value from the process.
- e. Intense work will be required from the Commission's team to negotiate detailed terms for the funding of each project; there are practical advantages in spreading this over time.

We have previously discussed with the Commission a well-defined two-tranche process. Our more mature thinking prefers a more open staged process that responds flexibly to offers received. We conclude that the creation of project portfolios is not possible without a flexible approach that will require some element of negotiation between the Commission, Project Developers and Member States. A suitable portfolio outcome simply cannot be predetermined only through a set of rigid competition rules and procedures.

3.5 Proposal for a Flexible Process

We propose a process that acknowledges that the varying state of readiness of available projects points towards a one- or possibly two-stage solicitation:

- main solicitation at the end of 2009;
- supplementary call for proposals possibly in 2011.

And project award in three stages:

- First Award to a few early projects by a limited competition, by first half of 2011, at about the same time that a short-list is chosen in preparation for ..
- ... Second Award to the bulk of the portfolio projects chosen in a more structured competition, by first half of 2012;
- Additional Award, if appropriate, to fill out portfolio gaps, by first half of 2013.

The process is designed to allow flexible timing and addresses the tension between pre- and post-FEED award. In more detail, we propose:

- a. ***Prepare a prequalification invitation.*** Start as soon as possible. As the comitology process comes to a conclusion a comprehensive document describing the procedures for the allocation of the NER should be prepared, including both threshold criteria and portfolio objectives in each of CCS and RES categories. This document needs to be clear and comprehensive, as it will set the standard for the process that is to follow. It may be appropriate, for example through a press release, to alert the industry to the forthcoming process as soon as it is decided upon.

- b. Candidate projects prepare.** Start as soon as possible. Project Developers are in many cases already in preliminary development. When they know the schedule for solicitation they should be able to prepare themselves for that event, for example by joining the Project Network, which will enhance their submissions and may in due course become a requirement.
- c. Solicit prequalification proposals.** By the end of 2009. Proposals for both CCS and RES projects are sought, on a basis that meets threshold criteria and shows how projects will participate in a portfolio. Projects may still be in preliminary development, but they need to be realistic and to have some level of Member State support in principle. Some projects may be well-developed.
- d. Receive and analyse proposals:** Second quarter 2010. Several dozen proposals may be received for each of CCS and RES. We expect that they will be quite varied, and provide a single pool from which both well-developed projects can be chosen for First Award, and other projects can be prequalified for a longer selection process. In both cases analysis should focus in the first instance on whether projects meet threshold qualifications, then on their state of readiness and maturity and only then on their indicative costs.
- e. Select First Award project candidates:** Third quarter 2010. It is expected that a few projects will be qualified and sufficiently advanced to make firm and credible indicative technical and commercial proposals, with Member State support. Some may have completed FEED studies. A group of such projects (perhaps two or three each of CCS and RES) that could form the core of a demonstration portfolio may be granted provisional award and negotiation of final terms could begin immediately.

The aim is to give an early start to the process, and incidentally to give an opportunity for the CCS Programme to take advantage of any well-qualified proposals that can benefit from EEPR funding. Such First Award projects will be selected for funding in advance of an established market value for the NER Pool, but it is expected that their calls upon Pool value will be well within an estimate of its value.

We would expect that given their advanced development, negotiation of the terms for funding of First Award projects should lead to FID in 2011, targeting the first quarter of that year. There would be no NER funding support offered for FEED studies for candidate First Award projects even if they eventually failed to reach FID.

- f. Select Second Award Candidates:** Third quarter 2010. At the same time as engaging with First Award projects, the Commission could select those projects that could participate in the Second Award round, likely to make up the bulk of each of the CCS and RES portfolios. Most project proposals can be expected not yet to be in Final Development. That would imply a need for FEED studies, completion of permitting and regulatory approvals and negotiation with host Member States over facilitation, support and funding. From projects in this category that meet threshold standards, a group would be chosen for negotiation and development over the forthcoming 12 to 18 months, targeting FID about one year later than the First Award projects. This negotiation, while it needs to be cooperative vis-à-vis the Commission, also needs to feel competitive pressure to ensure that Project Developers are offering best value.

The selected group would include projects chosen for their ability to make up between them, with the First Award projects, a full and rational portfolio that would meet the aims of, respectively, the CCS and the RES Programmes. The

aim would be to choose a group that was large enough, and appropriately configured, to meet those aims in several different ways. For example, in the case of CCS, if three First Award projects had been chosen, it might be judged that a further seven projects were required; in that case perhaps 11 candidate projects might be selected to take forward into negotiation for those places. In this way competitive pressure could be maintained. The procedure would be:

- candidate projects negotiate to confirm their preferred status on grounds of sound preliminary planning and cost estimates and solidity of Project Developer's and Member State's in-principle support; this process may take three months or more and experience suggests some candidates may drop out;
- it may be that this preliminary negotiation effectively constitutes a competition that yields high confidence in a group of projects all of which qualify for the Second Award round. In that case the Commission could announce winners prior to the completion of FEED, thereby minimising “wasted” public money on FEED studies for projects that are not implemented;
- however if a pre-FEED award is not considered prudent, candidates remaining in the selected group should commit to a FEED study and other aspects of Final Development; risk of a failed FEED and an abandoned development at this stage lies with Project Developers;
- post-FEED, definitive technical and financial proposals are put forward to the Commission and selected competitively (see Section 8 below);
- from the example figures quoted above, the majority of candidate projects could be successful; the costs of complete and well-run FEED studies carried out for rejected proposals, may, depending on circumstances, be shared by the Commission (especially if the knowledge gained and shared in the FEED stage is deemed to be of value to the Programme);
- given the pre-negotiation during the Final Development process, it could be expected that final documentation and definitive award could follow quite quickly, perhaps in less than six months.

This procedure could result in funding allocations during 2012 to the bulk of the projects in the CCS Programme and by analogy possibly to the RES Programme too. There could high confidence in most such projects setting a credible 2015 target, while others might follow shortly afterwards. It is likely that by the time the First and Second Award project portfolio was fully formed, the NER Pool could be fully valued by reference to market activity.

- g. ***Additional Award:*** During the selection of projects for the Second Award portfolio it would become clear whether there were still funds available to allocate and gaps to be filled in the CCS and RES Programmes. If so, a further solicitation could be held, possibly in 2011, giving the chance to late-developing projects to make offers. The process for this could be decided at the time in light of the potential offers expected, informed (and accelerated?) by the experience gained in the First and Second Award processes. Timing would be determined by the operational deadline – we have suggested 2017 – beyond which projects would be considered no longer able meaningfully to contribute to the Programmes.

3.6 Complexity and Timing

A tentative timetable for project selection and funding implied by our recommendation is shown in Figure 2. We consider the timetable aggressive, but we also hold firm to the objective of a material number of operating demonstration projects by the end of 2015. That can only be achieved by an early start to the process once comitology is complete, but also needs to recognise that external events may in part set the pace. For example, very few projects are advanced with permitting, and it

is often this activity that determines timetable. Similarly, it may well be Member State processes for allocating funding and choosing projects that will decide the schedule.

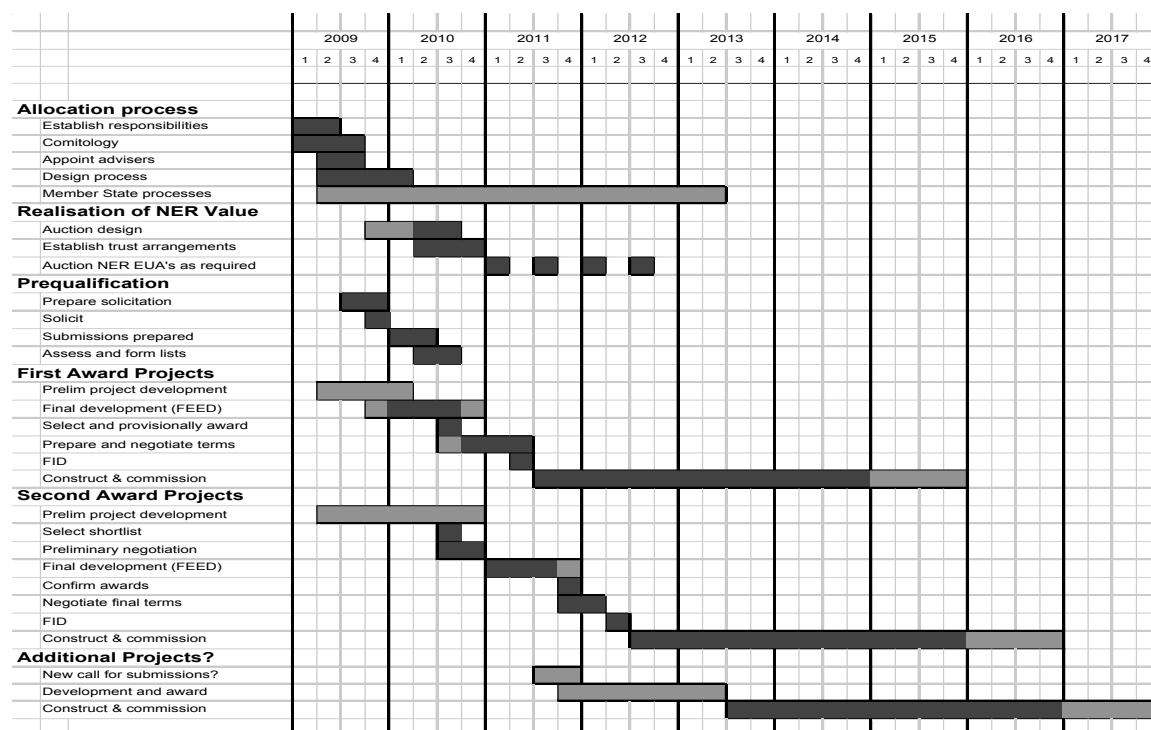
On the basis of our varied experience in processes similar to this one (including Alberta and the UK), we see the allocation of NER funding as exceptionally complex, whichever precise processes are used. The scope, complexity, political sensitivity and compressed timescale of this process are a real organisational challenge.

The Commission may wish to draw on the particular and recent experience in similar competitions in Member States and elsewhere. For example the UK competition may have lessons for this process. The experience of Alberta may also be helpful; we understand that a highly focused team is administering a complex programme there on a rapid timetable and largely keeping to schedule.

These experiences emphasise the importance of building confidence among all participants with a transparent process that is well thought-out and “gets it right first time”. Effort spent in fully designing the process now is not likely to be wasted.

In particular, we suggest that serious consideration be given now, in parallel with the comitology process, to appointing advisers. Advisers should provide the technical skills to compare projects and assemble Programmes that work across different generation, carbon capture, transportation and geological technologies. We would also recommend the appointment of advisers with hands-on experience of running complex competitions for public sector funding; good experience is available in organisations that have helped to design and administer competitions for public-private partnership roles across several Member States. Such advisers should of course be independent of any of the potential recipients of NER funding.

Figure 2 – Tentative Schedule



4. Maximising NER Value

4.1 Background – the Operation of the Allowance Market

There is today no market for Phase 3 Allowances and it is not expected that one will exist in any substantial form until the auction rules are established with some degree of certainty, perhaps in late 2010. For the reasons outlined below, the traded market is not expected to be deep or liquid, especially in its early stages. However, it may be sufficiently reliable to provide a “fair value”¹¹ market price for the purpose of allocating funds.

The best indicator as to how the Phase 3 market is likely to function is the existing market in Phase 2 Allowances. This market has the following characteristics:

- a. Throughout Phase 2 it is expected that a total of about 10.7 billion Allowances will be issued, of which only about 3% are expected to be awarded by auction, by seven Member States. Daily trading volumes averaged 8 million in 2008 and 18 million in the first quarter of 2009.
- b. Auctions are held at the discretion of Member States, for example biannually and more recently monthly by the UK. Other countries (e.g. Germany) sell smaller lots through banks or brokers. Although so far only two auctions have been held, prices achieved have closely reflected those traded in the market, as would be expected.
- c. Buyers at auction are primarily utility and industrial companies who need Allowances for their business. Trading is carried out by a variety of industrial companies as well as brokerage houses and the commodities desks of financial institutions.
- d. Allowance prices have been volatile, moving in the range €13 to €18 for December 2009 vintage Allowances. The current volatility index is in the region of 60%.
- e. There is forward market in Allowances out to about 2012, at which point it becomes extremely shallow. Even though Phase 2 Allowances are tradeable forward into the Phase 3 period this has hardly happened.
- f. As is normal in a market where commodities are not time-limited, forward prices reflect the current spot price, discounted for the carrying cost of capital and subject to an adjustment for regulatory and credit risk.
- g. Options are occasionally written and traded in small volumes, with a term out to two or three years, but they are illiquid and expensively priced.

4.2 Today's Market Value of Allowances

Current Allowance market prices at around €12/tonne are widely considered “low” compared with expectations, on the basis of market fundamentals, of much higher prices as Phase 3 develops. In particular, commentators argue that the ratification of a new global climate change agreement for the post-2012 period – likely in 2011 – will lead to a step change in carbon prices. However, there is no evidence of any major party buying and warehousing Allowances against their expected future rise in value;

¹¹ In the technical sense of a value agreed transparently between a willing buyer and a willing seller.

and of course if any material number of market participants were to do this the price would rise to reflect demand.

The participants in the market to whom we have spoken suggest that today's low price may be explained by several factors:

- medium term capital constraints on long-term buyers and users of Allowances;
- the risks both of the economy and the regulatory structure of Phase 3 ETS;
- a large overhang of Phase 2 units;
- uncertainty about political developments over the next few years;
- the recent decision on the total size of the Phase 3 Allowance issuance (taken before it was known that the world was to suffer a recession that would depress Allowance values).

There is also a view that in addition to long-term macro-economic effects on carbon price, there may be a shortage of Allowances when trading starts in 2011, as power generators need to build a stock of Allowances to allow them to hedge risk. In our view, it would be unwise to rely on this assumption, which is uncertain and may anyway be of marginal effect.

The current low value of the NER Pool is a concern for the CCS Programme, with its very specific funding requirement. Even on optimistic assumptions (majority allocation to CCS over RES, inclusion of several projects benefiting from the EEPR, maximum risk-bearing by Project Developers), it will be hard to realise the full vision of the CCS Programme without generous financial support from other sources, most probably including Member States.

4.3 Auction vs. Trading

We may assume that the prices to be received at auctions of Phase 3 Allowances will track those in the traded market. The traded market is more immediately liquid, as trades take place all the time, and should reflect market value consensus. But it does not have the depth that is required to handle the very large bulk trades that will take place through auctions. The monetisation of the NER Allowances will rely, whenever it takes place and whether underwritten or not, on an auction process.

We are unsure of the mechanisms for such an auction – whether the Commission itself can run it, whether there is a role for EU financial institutions or whether it must be run by a Member State working by agreement with the Commission.

The annual volume of auctions in Phase 3 is likely to be well over 1,000 million Allowances per year. We are advised that in this context a series of auctions totalling 300 million tonnes over one or two years, perhaps at monthly intervals, is unlikely to move the market.

4.4 Future Value

The market for Phase 3 Allowances does not yet exist, but we may assume that by 2011 it will do, and that it will function in a similar way to the current Phase 2 market. We do not know now what the spot price of Allowances will then be. But we can reasonably predict how the market will price a forward purchase of Allowances relative to the spot price. Because Allowances will be fungible throughout the whole period of Phase 3 (and throughout the EU), the spot market

value, subject only to the risk-adjusted cost of carry, will reflect the market consensus on the future value of Allowances¹².

A purely rational economic market participant will not offer a future price which is different from today's price discounted for a risk-adjusted carrying cost; if it seeks a long position in Allowances, its cheapest way to achieve one is to buy them in the market at about the same price at which it would be able to sell them.

4.5 Underwriting and Price Guarantees

It is thus clear that anyone underwriting a future price at a higher level than indicated by the market makes a value contribution to the CCS and RES portfolios. There are some parties that might choose to do this, and the competitive process needs to encourage the contribution of value in this way:

- a. **EIB:** The EIB is a commercial bank, but has a mandate to allocate capital in the furtherance of EU social aims. We do not believe that without a very specific mandate this role is likely to extend to underwriting future Allowance prices at levels materially above market, thus effectively contributing to project funding. Subject to anything the EIB might say, we think it is likely that its role will be limited to facilitating the monetisation process without a major contribution of cash value. We propose at Section 4.6 below an important role of this kind that EIB might undertake.
- b. **Project Developers:** Project Developers are neither irrational market participants nor charitable institutions. But they may welcome the opportunity to contribute to projects in the form of underwriting the future price of Allowances; they are already in this process undertaking a variety of project risks, and participation in the Allowance market is for many of them a regular part of their business. This is a risk exposure that they understand and can to some extent manage. They should have the opportunity, in a competitive process, to offer project value in this way.

We note that it will be a Commission requirement that such an underwriting cannot be seen as offering the opportunity to make windfall profits, so some limits will need to be applied. Equally, we recognise that the Commission is not in a position to offer as a *quid pro quo* a guaranteed floor price.

- c. **Member States:** Member States may likewise prefer to make all or a part of their value contribution through underwriting future Allowance price. There are precedents in Member States for such underwritings, for example in the UK an understanding that a contract for difference as a means of support for its own CCS demonstration programme may be acceptable. Where underwriting was by a Member State no cap would need to apply on the value that it might realise from the arrangement.

4.6 Recommendation for Maximum Value

We recommend the following process for realising best value from the NER Pool Allowances:

¹² For those for whom this is counter-intuitive, given the widespread anecdotal belief that future prices will be a multiple of today's, the analogy is with currency markets (fungible across time) rather than with oil markets (value specific to time and place).

- a. **Assessing bids for funding in cash terms:** The NER contribution is allocated to projects competitively by reference to bids expressed either as Allowance allocations or cash value. An assessment of the value of the funding package, including any element of EEPR support, will be needed to allow a comparison with the value of contributions from other sources.
- b. **Allowances allocated to projects in trust:** The number of Allowances needed to realise the value to be allocated is assessed by reference to market value at an agreed date relative to the award process (for example at project FID), and delivered to a trustee. We propose that an institution like the EIB could be asked to consider this role, and it is also possible that Member States could fulfil it. We understand that the Commission is not in favour of allocating Allowances to projects in kind, but we recommend consideration of this trust arrangement which we believe fully protects the public interest.
- c. **Immediate monetisation is possible:** The beneficiary in trust will be the project entity, which may instruct the trustee at any time to sell its allocation of Allowances. Because some Project Developers will want to realise the value of the Allowances immediately, the Commission will need to be ready to facilitate auctions on the dates on which project FIDs are taken.
- d. **Deferred sale values are capped:** The value of any deferred sales will need to be managed in a way that avoids windfall gains to projects and hence to Project Developers. This may be in the form of a cap on the value to projects from future changes in Allowance price, set by reference to a predetermined value, established either globally by the Commission or in negotiation among the project parties as a condition of award¹³. Where a Member State has underwritten the value of the Allowance allocation, it should benefit from any increase in value above the cap level.
- e. **Public sector Allowance price risk is controlled:** In all cases sufficient funding to complete the project will have to be guaranteed as a condition of FID by Project Developers and the Member State. In other words, if the project chooses to defer sale of the project Allowances, they will underwrite the value of the project Allowance allocation on terms they negotiate between them.
- f. **Project Developer continues to take full performance risk:** For reasons we discuss in Section 7.5 below, we recommend that the conditionality of funding on project performance is achieved not through deferred funding but through binding claw-back provisions in the event of non-performance. The scheme we propose is greatly to the public advantage in increasing the value of the NER Pool and can be executed in a manner that brings minimal performance risk back into the public sector.

4.7 Staging project award

At all three award stages of the project selection process, the Commission will need to consider the remaining available value of the NER Pool, always by reference to current market value and how the Pool might shrink or grow as future prices change. This consideration may necessitate some changes to the proposed process laid out here for certain projects.

¹³ It should be noted that it will be difficult to implement the cap in practice; a Project Developer that wished to avoid it could choose to auction its NER allocation immediately and use the proceeds to repurchase Allowances in the market.

First Award projects (Section 3.5 above) will receive provisional funding awards in 2010 with the target of reaching FID in early 2011. There should by the time of FID be a market in Phase 3 Allowances, so that the funds to be awarded can be reliably translated into a number of Allowances to be allocated. If there is at that time no reliable Phase 3 Allowance market, other provisions will have to be considered.

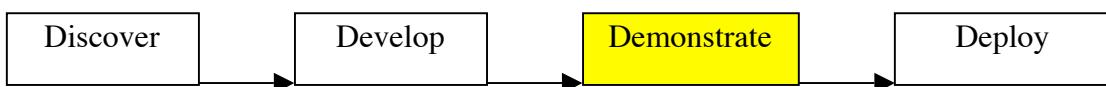
A similar issue may arise for the final (Additional Award) projects to be mandated. The funding to be allocated will be agreed at the time of provisional award some months before FID, on the basis of the then current market value of the Allowances remaining unallocated from the NER Pool. Then either Project Developers will have to agree to bear the risk of Allowance prices in the period between the selection of their project and FID, or the relevant Allowances will be immediately auctioned and the proceeds held for allocation to projects in cash at FID.

5. CCS and Eligible Renewables

The Commission is currently considering how to meet the requirements of the Directive to allocate the NER Pool between the CCS Programme and eligible renewable projects. The option of making an allocation of the NER Pool between the two categories “ex-ante” and running a competition for each is not favoured; it would require an early administrative decision on an essentially political matter. On the other hand, the proposal that all projects should compete among each other “on their merits” cannot work either.

5.1 Portfolio Principle

The CCS Programme is designed to support the demonstration of technologies that have reached a specific point in their development cycle:



Every new technology needs to undergo this process¹⁴. Both Commission and Parliament have recognised this need for CCS over the past two years, which is why they have mandated the CCS Demonstration Programme, and allocated funding for it through the establishment of the NER. They have ensured that the Programme is properly configured and costed, with an internal integrity designed to demonstrate a specific and bounded range of technologies.

The much more open-ended target for eligible renewable technologies is hard to analyse. The Directive¹⁵ gives the objective of this deployment of the NER only as to “accelerate demonstration of the first commercial facilities and demonstration of innovative renewable technologies that are not yet commercially viable.”

What is now needed is a parallel objective for a relevant set of RES technologies, which can be the basis of a similarly structured and bounded demonstration programme. Within the spirit of the Directive, they need to demonstrate innovative technologies already developed and proven to pilot scale. After they have been successfully demonstrated in this programme, they should be ready to move up into commercial industrial deployment.

5.2 A Renewables Portfolio?

It is beyond our expertise or brief to propose a basis for formulating a portfolio of renewable technologies to be demonstrated. But without such portfolio proposal it is impossible to know what kind of funding is necessary or appropriate from the NER Pool.

We recommend that the relevant industry bod(ies) be asked to propose a set of objectives for the RES portion of this funding, together with their proposed structure for a portfolio; we understand that some work is currently being done along these lines. Outline estimates of costs should be provided as they have been for the CCS Programme. Such estimates should show which part of the cost is specific to the demonstration role of projects and not met by any other kind of public contribution.

¹⁴ Other low-carbon technologies (mature renewables, nuclear) have received tens of billions of euros of essential public funding over decades for this same purpose. CCS has received no material public support for its development programme.

¹⁵ Directive, Preamble Clause 20

The rules for allocation of funds among RES projects could then be applied in a manner analogous to those for CCS, though the work to get to this point will have to be done in time not to delay the overall process.

Work needs to reach maturity very soon, so that candidate projects can be solicited within a clear structure at the end of this year. If an assessment process such as the one we propose in Section 3.5 above is to be used, the allocation of funds among projects in the two portfolios can then be made in ways that most nearly meet the needs of each Programme.

Within each portfolio, projects need to compete among themselves for inclusion. The rules of that competition need to be parallel as between the two portfolios, sponsors being required to carry risk and the concept of an “economic gap” (see Section 7.2 below) being applied to each.

What would not work would be some notion that all projects compete with each other on their merits (e.g. incremental cost per tonne of carbon emission saved), since that would deny both for CCS and RES the demonstration purpose of each of the Programmes. Each Programme must be designed to demonstrate not just the “low-hanging fruit”, but also the more difficult and risky technologies that may have more long-term potential.

5.3 Threshold Criteria for all Projects

It may assist the process if we articulate a set of ground-rules that applies to all projects that receive funding from the NER Pool. These rules are already proposed for CCS projects, and we propose wording as follows to make them applicable too to renewables:

- a. Each project must demonstrate its technical, regulatory and financial feasibility with committed total funding and a satisfactory allocation of risk to Project Developers:
 - technology, completion and performance risk should in principle lie with Project Developers, subject to force majeure provisions;
 - committed funding must include material Project Developer funding and may also include that of Member States.
- b. Disbursement should be conditioned on, or at risk of, actual power generation, fuel generation and/or CO₂ capture and storage as agreed contractually at FID:
 - there may be a threshold requirement for both CCS and RES projects before they can receive any payments – e.g. 80% of MW output promised or for CCS 80% of all CO₂ produced stored;
 - payments to be made per MWh of output or per tonne of CO₂ stored or avoided.
- c. The main elements of the technology involved in the project must have already been demonstrated at pilot scale, meaning installations in a real-world environment producing actual greenhouse gas mitigation.
- d. The technology to be demonstrated must not be working at commercial scale as of January 2009 anywhere in the world:
 - in the RES case of tidal power, for example, tidal barrages would be excluded whereas horizontal or vertical axis turbines could be eligible.
- e. With the exception of the EEPR, there should be no existing support scheme (funding or regulatory) in the EU that covers the additional demonstration costs for which NER funding is sought:

- definition of additional cost is clear for CCS, but needs to be established for RES.
- f. Projects should be of sufficient scale to demonstrate their industrial deployment, but not materially larger:
 - the appropriate minimum size for CCS power projects varies considerably¹⁶ and when industrial projects are included there will be further variation; the size of projects should also be no larger than the minimum viable industrial size so as to preserve NER funds;
 - as a guideline, a demonstration project of any technology is likely to be between 5 and 20 times the size of the preceding pilot project.
- g. Knowledge-sharing is required as described elsewhere, including for FEED studies publicly funded in whole or part for candidate projects that are not accepted.

Given that these criteria are already well-established for CCS, it is likely that most short-listed CCS projects fulfil them. Commentary on their relevance and application to RES from the renewables industries would be welcome.

¹⁶ ZEP's work on this can be found in a presentation at www.zero-emissionplatform.eu/ZEP_Technology_Matrix.pdf, dated 15 October 2008.

6. Member States – Funding and Relationship

6.1 Role of Member States

Given a fixed amount of funding available from the NER, and a competitively established limit to the contribution that Project Developers will make, the role of Member States in filling any remaining gap from nationally controlled public funds is likely to be vital.

The Directive requires that the allocation of the NER is administered through Member States. It also encourages (but does not require) co-funding by Member States, not least by specifically referencing¹⁷ the support of CCS demonstrations as a potential use for the 50% of auction revenues that are to be allocated to clean energy uses.

Member States are therefore likely to be involved at every stage of the process. It will be in the interests of the CCS and RES Programmes to solicit maximum input from Member States, in the form of financial contributions as well as political and regulatory support. Competition among projects for inclusion in the programmes will not only take place among Project Developers making the best technical, timing and cost offers they can, but also among Member States for the projects that they choose to support.

6.2 Forms of Member State Financial Support

Member States may choose to support the projects they host with cash or with other forms of contribution such as the underwriting of Allowance values (see Section 4.5 above). Some less transparent forms of support may be applied through tax provisions and regional grants, and indeed existing legislation already grants a variety of benefits to potentially eligible projects in different jurisdictions.

Whatever the form of support, Member States may wish to make support conditional on performance, or they may choose to make it in the form of a simple grant to projects, thus increasing the value of the support by sharing risks with Project Developers. We do not recommend trying to regulate or conform Member State contributions to a common norm; it would be too complicated and inject a political element that will make allocation of the NER more complicated and slower.

6.3 Treatment of Member State Support

We have been asked to comment on whether the competition among projects for inclusion should be on the basis of minimising the total public sector funding offered (i.e. from Member States¹⁸, EEPR and NER considered together), or of minimising only the sum of EEPR and NER funding. We understand that it has been accepted that EEPR and NER funds should always be considered together as a funding bloc for the purpose of assessment; and we are working on the assumption that no State Aid issues arise from either approach, the necessary exemptions having been granted.

The argument for using the sum of EEPR and NER funding alone as the assessment is simple – it encourages Member States to make the maximum contribution into programmes that are struggling to find funds to get to completion. Unsurprisingly, we support this argument.

¹⁷ Directive, Article 10a (3).

¹⁸ This may include Structural and Cohesion Funds

We believe the argument against is founded in fairness; why should a rich Member State be able to improve the chances of its own companies receiving EU funds? That is of course a political question which we are not well qualified to answer, but overall rules on geographical distribution such as we suggest at Section 6.4 below may help. Also, as was pointed out in the January 2008 communication on financing CCS, Member States have great freedom to spend structural/cohesion funds on CCS if they so desire; and of course, the availability of such funds is inversely proportional to Member States' wealth.

A supplementary issue that argues for considering Commission funding alone is that we think Member States should be encouraged to support their sponsored companies in other ways beyond simple funding, as discussed at Section 6.2 above. Many of these forms would be very difficult to value and an attempt to do so might lead to further complexity in the assessment process.

6.4 Commission/Member State Relationship

The Parliament, the Commission and Member States are currently working together to develop the rules and procedures for the allocation of the NER Pool. Once the rules are established, there will be a framework within which the relationship will be defined.

The Commission will hold an open competition directly among project sponsors bidding for inclusion in NER funding. Submissions to the Commission (or a body set up for the purpose) would be endorsed by Member States, certainly with regulatory and policy support, and possibly also with funding, which may at that stage be only indicative. Member States may wish to establish their own internal processes – formal or informal – to select projects for support. However, we would strongly urge that Project Developers are not required to submit to two separate tender processes, either simultaneously or even worse, sequentially; apart from the discouraging effect on Project Developers, it would take too long.

The strength of Member State support will be a major factor in project selection. Indeed, in many cases it will determine the outcome of the competition for NER funding. We have therefore considered the alternative competitive process in which NER funding is allocated to Member States representing their sponsored projects. This would recognise the reality that funding from Member States will greatly influence the shape of the Programmes, and give full weight to their importance in a negotiation that is likely to become triangular, with Commission, Member State and Project Developer at the three corners.

This alternative might relieve some administrative pressure on the Commission, but is also likely to be slower. We still recommend that the process remains driven by Project Developers pitching their proposals to the Commission, so that private sector impetus helps to drive the process, and the Commission retains the coordinating function essential to building workable portfolios of projects.

6.5 Geographical Spread

The CCS Programme must show a geographical spread throughout Member States. This requirement is partly driven by the obvious need to test different technologies in different operating, climatic and regulatory environments. But it also includes an important political element, to ensure a fair distribution of benefit among Member States.

We recommend that in the context of the political debate on the allocation of resources between old and new Member States some specific rules or guidelines are developed. Without such a background it will be difficult for competing projects to know where they stand. Two ways that this might be approached are:

- in addition to the existing mandate of the Directive that no more than 15% of the NER may be allocated to any single project,¹⁹ some restriction could be placed on the proportion of NER funds that are allocated to any one Member State;
- there could be a special allocation of a proportion of the NER Pool to Member States with lower per capita GDP's: relative per capita GDP should also be factored in to expectations of co-funding from Member States.

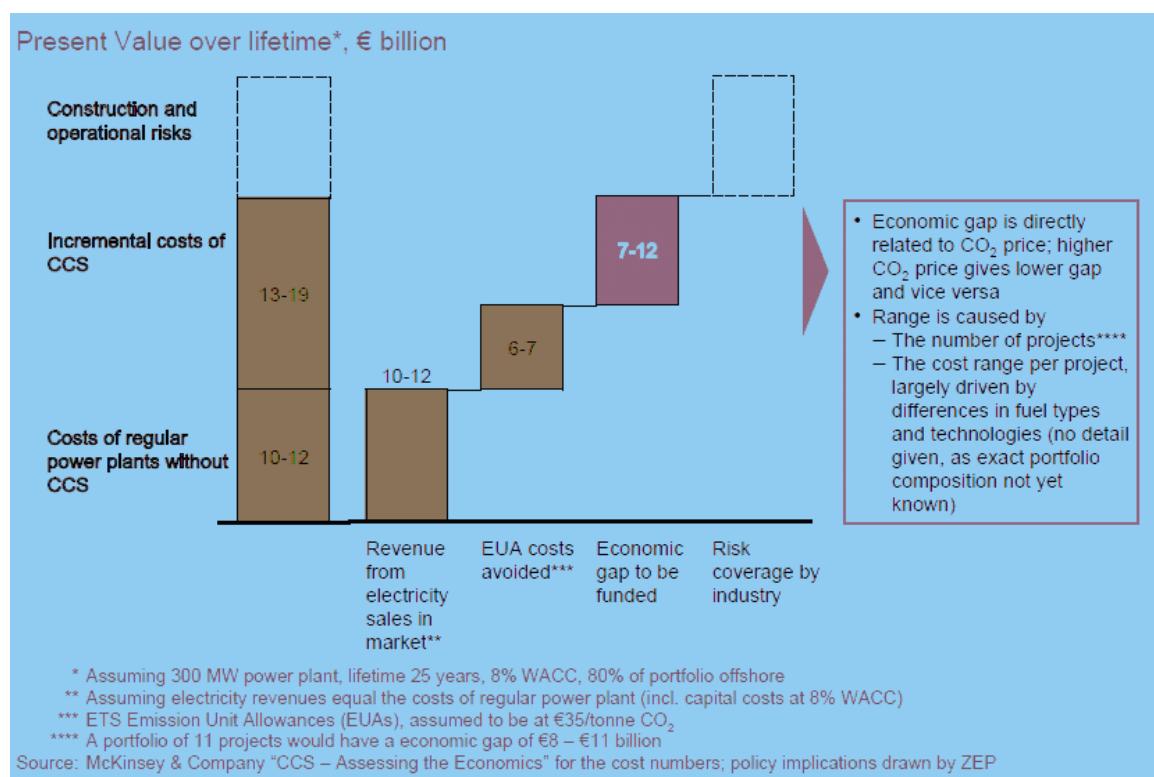
¹⁹ Directive, Article 10a (8)

7. Project Funding

7.1 Project Costs

We are unable to comment on the cost structure of putative RES projects, but those of the CCS Programme have been quite extensively studied. We show as Figure 3 Exhibit 7 of the ZEP November 2008 Submission, which lays out how Programme costs fall into four buckets, of which the portion to be covered by public sector (EEPR, NER and Member States), the “economic gap”, is shown in purple.

Figure 3 – CCS Portfolio Value Components



7.2 Funding Sources

Project Developers will be putting forward qualifying projects to compete on their merits (technical, financial and geographical) for support from the NER. Their financial proposals will amount to bids for contributions from the NER Pool, in effect to fill the gap in funding left after Project Developers have assembled the strongest funding package they can, bringing together their own resources and those of their supporting Member States. In some cases their proposals will also benefit from a fixed dowry of EEPR funding, pre-allocated according to principles that may be different from those relevant to the NER. The mechanisms for selecting projects are discussed in Section 8 below.

An example may be helpful. The “average” project implied by Figure 3 would have an “economic gap” as implied by the figure of €860 million²⁰. If €180 million of

²⁰ Central value of €9.5 billion spread over a central figure of 11 demonstration projects.

EEPR funding were available, around €700 million would need to come from NER and Member States working together. Except on more optimistic assumptions as to the value of the NER, this suggests that the majority of public sector support will need to come from Member States, especially for projects (the majority?) that do not benefit from EEPR support.

The bidding process as proposed may not be ideal. But the reality is that the neat split in demonstration project cost elements shown in Figure 3 is in fact very nebulous. So a bid by Project Developers, who will end up bearing the actual project cost and risk after public funding has been allocated, is probably the only realistic and competitive way to proceed.

The procedure as laid out implies that Member States provide firm offers of support before projects have been selected for inclusion in the Programmes, which will be hard to achieve in practice. The NER Pool is then to use its finite resources to meet the funding gap across several projects as best it can. The result is likely to be a shortfall of NER funds, at which point the Commission will revert to Project Developers to negotiate a better deal; this will turn into a three-way negotiation in which Member States will also play a major part.

However, in our view the alternative of fixing the allocation of NER funding and then inviting Project Developers and Member States to fill the gap is even less satisfactory. That would in effect cede control of the design of the demonstration portfolios to Member State interests, which is unlikely to achieve the objectives of the Programmes.

7.3 Project Developers

The Directive²¹ states that projects to be funded should “have significant co-financing by the operator covering, in principle, more than half of the relevant investment cost”. It is not clear how the Directive intends that this provision should be interpreted; we assume that “relevant investment cost” excludes the base power plant and refers only to the capital cost of the CCS element of each project.

On the basis of these figures it would seem that ZEP’s assumptions, which we share, are broadly consistent with the requirements of the Directive; there will be “substantial co-financing by the operator of the installation.” It is clear that if Member State contributions are included, well over half the CCS cost will be met by funds other than the NER.

We should however recognise that Project Developers will approach their potential investments in projects through a rigorous process of return analysis. They will need to demonstrate to their Boards that on reasonable assumptions as to economic variables and project cost and performance, any sponsor investment will make an appropriate long-term return. The investment decision in these projects will be entirely an issue for the Project Developers rather than their bankers. We would not expect banks or capital markets to lend on any basis that directly bears project risk, given the nature of the CCS Programme. Any loan funding is likely to be to Project Developers against their corporate credit, or subject to sponsor guarantees, and therefore considered as a corporate investment.

²¹ (*Preamble, Clause 20*); being in the Preamble, this Clause is presumably non-binding. The binding language of Article 10a (8) states only that NER funding shall be “complementary to substantial co-financing by the operator of the installation”.

7.4 EEPR Funding

Especially given the current low price of Allowances and the uncertainty about NER Pool allocation between CCS and RES, use of EEPR funding can contribute to ensuring maximum possible funding for the CCS Programme. However, we are cautious about the risk of allowing EEPR funded projects to distort the competition among the wider universe of eligible CCS projects. We therefore recommend that the Commission accept any offer from an EEPR-funded project only on its merits; for competitive purposes the funding contribution to any project should be deemed to include both EEPR and NER funding.

Notwithstanding its risks to the competitive process, EEPR funding is likely to allow some candidate projects to commit funds early to Final Development and to facilitate First Award projects, as described in Section 3.5 above.

7.5 Payment for Performance – On-account Payments

It is a condition of allocation of the NER that payment is made only for a project that successfully produces clean energy and either removes or avoids carbon emissions, demonstrating “verified avoidance of CO₂ emissions”²².

We have proposed (Section 4.6) a scheme of allocation for the NER Pool that allocates Allowances to selected portfolio projects through a trust structure, the value being available to projects at a time of their choosing, from FID onwards. Such a scheme has to be structured as a payment on account, which can be recovered if it is not due course earned by performance. We propose below a “claw-back” mechanism that should accomplish this.

The justification for making payments on account is one of financial efficiency, which should be very directly reflected in a reduced demand for public funding and thus potential to fund more projects. The efficiency arises through the difference in the notional cost of capital between European governments on the one hand and Project Developer funds placed at project risk on the other. By way of example, the developer might value funds received at FID²³ at about 2.1 times what they would be worth if delivered during operation. Should the Commission choose to compute the time value of delaying its payments (which it might not) at an appropriate cost of capital, it might use a value factor of around 1.4 times. These very rough indicative figures suggest a 57% uplift in the value of the NER contribution to the projects, all of which we would expect would accrue back to the funding pool through competition.

The additional risk that the Commission would bear would be the credit risk of the clawback, plus some additional litigation risk in the event that performance provisions were disputed. It is essential that the obligor for clawback is not only the project company – often a fragile entity – but the Project Developer companies themselves. For Project Developers with weak credit, clawback would be against bank guarantees. Requirements to monitor performance would be unchanged whether the payments were made on account or at the time of performance.

²² Directive, Article 10a (8)

²³ Assume for the sake of example that funding would be earned at a weighted average date of 2020, vs FID in 2012, and that the project target return was 10% p.a. vs an EU cost of sovereign funds of 4% p.a. (These return rates are for the purpose of an example only and are not intended to predict, pre-empt or persuade Project Developers as to what the appropriate hurdle rate for a demonstration project should be).

There are precedents for government agencies accepting corporate guarantees in support of future obligations – for example in the very public UK case of Metronet, where sponsor guarantees were successfully called after the bankruptcy of the project entity; other UK PPP projects show similar provisions on a smaller scale. But while the principle behind NER clawbacks is arguably well-established, the scale and term proposed here may be unusual.

We strongly recommend the on-account payment scheme, which will effectively increase the value of the NER Pool at low risk to the Commission. If for legal reasons it cannot be implemented in full, we recommend that at a minimum partial implementation is considered.

7.6 Payment for Performance – Measurement

Demonstration of performance on project completion is a technical matter. Standards for output both of power and CO₂ will have been agreed contractually as a condition of NER funding. Performance would routinely be tested at physical completion and during the period of commissioning.

The scheme for earning performance credits, whether they are reflected in cash payments or in reductions of the potential clawback liability, can be identical. The scheme will need to incentivise continued operation of the plants for a period after completion as the marginal operating costs, including efficiency loss, of most CCS facilities are generally high; without a continued payment over time there may not be enough continued incentive to continue to operate the CCS element of the project. The scheme should also reward improvements in performance that the Project Developer is able to make over the learning period starting immediately post-commissioning.

We recommend that the period for earning performance credits should be no less than five years nor more than ten, depending on a variety of criteria including in particular the configuration of storage. This short period, relative to expected project life, should be enough to prove the performance of the project. However, there is no suggestion that at the end of the earning period it is expected that the project would close down, or that it would continue to run but without CO₂ abatement.

An example of a scheme that might apply to a particular project, and there will be variations, could be:

- a. The project sets out at the time of FID its targets for performance over the selected earning period. These will include power output, availability and (for CCS projects) the target quantity of CO₂ that is to be captured and stored.
- b. A metric is chosen for the “carbon abatement” performance of the particular project:
 - paying directly for carbon emissions stored from CCS projects has the advantage that no definition of “clean MWh” is needed – some payment could be earned for even partial capture;
 - for RES projects, and possibly for some CCS projects, payment could be in the form of a feed-in payment per MWh of clean power produced or tonne of CO₂ avoided, possibly measured by using the national or EU electricity mix as a benchmark;
 - different schemes would apply to different technologies.
- c. The award of NER funding will be decided through the process of solicitation and funding award (see Section 8.6 below). This sum is then divided by the

accumulated target quantity of the chosen metric (CO₂, MWh, etc.) and the resulting per-unit payment computed:

- the amount might be a flat nominal sum per unit;
- more elaborate structures are possible that weight the payments to the early operating years, or make them constant in real terms.

Many variations to this scheme are possible. For example, as laid out here the scheme severely penalises delayed start-up, because the earning period starts at the scheduled, not the actual, completion date. Subject to certain limits, it would be reasonable to limit the Project Developer's risk by allowing the earning period to start only after start-up, whenever it occurs.

Industry will also expect very clear exemptions from losing benefit if their performance is delayed or reduced by force majeure events. We expect that the definition of force majeure will be hotly debated; some contentious items will concern loss of permits, geology and regulatory change.

8. Project Selection

Section 3.5 above suggests a process and sequence for selecting projects. This Section focuses on the criteria by which projects can find a place in a project portfolio and the basis for choosing one over another.

It is difficult for us to comment on the selection criteria for RES projects until the objectives of this programme have been better defined. But for the CCS Programme, some criteria are clear, and others can be proposed in a form that reflects the intention of the Directive and previous EU resolutions.

8.1 Threshold Criteria

Threshold criteria have been proposed for all projects – both CCS and RES – in Section 5.3 above. The criteria are consistent with those recommended by ZEP in the November 2008 Submission, and provide a first filter of eligibility for any project.

8.2 Timing

It has been a long-standing target that projects should all be required to be implemented by the end of 2015. As is now evident, this is an exceptionally ambitious target. However, with a flexibly staged solicitation process it is hoped that there are enough well-prepared projects that the majority of the portfolio can be expected to meet the 2015 deadline. Later projects could be operating by 2016 or 2017, and we would recommend that this degree of delay for part of the portfolio should be accepted.

8.3 Geography

The Programme must show a geographical spread among Member States. We have suggested at Section 6.5 above how this might be implemented. This factor is likely to be material in the process of project selection.

8.4 Technology

The November 2008 Submission is quite prescriptive about the technologies that should be tested in the CCS Programme. There are no fewer than sixteen technology criteria for the Portfolio, of which the ones that are likely to be the primary filters in selecting projects are:

- Fuels: Hard coal, lignite, gas and co-fired biomass
- Capture Technologies: Precombustion, post-combustion, oxyfuel
- Transport Technologies: Pipeline (including cross-border), ship
- Storage: Onshore, offshore, depleted hydrocarbon, saline aquifers

The November 2008 Submission shows how in an ideal world a programme consisting of only seven “archetypical” projects could be assembled to demonstrate all the technology characteristics listed. It also lists 34 known project proposals that could be candidates for inclusion in the CCS Programme. In reality, ZEP recommends that ten to twelve projects are likely to be required to cover the full spread of technology to be proven, which is the basis for the estimated economic gap of €7 to €12 billion.

Choosing projects that bring together these technology elements in a rational way and selecting among them those most likely to demonstrate the technologies successfully, is a complex task. When considered in light of the geographical and timing constraints it is still more so. It can only be achieved via a process with some flexibility and negotiation.

It will be an early task for the Commission, on technical advice, to confirm or modify the recommendations of ZEP, particularly in light of its emerging view as to available funding. In the first instance further detailed engagement with the technology subgroup of ZEP may well be constructive.

8.5 Value

Given that projects must be chosen to meet the criteria of timing, geography and technology, the selected portfolio must also achieve best possible value for the public funding provided to the CCS Programme. The classic approach to value is to encourage promoters to compete for funds in a well-managed process. Where a clear requirement for each project one by one can be specified clearly, that is realistic and practical. But where a whole portfolio must be selected together, and on a tight schedule, another solution must be found.

There is a temptation to rank projects simply on the grounds of their cost per tonne of carbon stored or (in the case of RES projects) avoided. The allure of this approach is that it is simple and transparent, and can be applied equally to CCS and RES projects. But it will not meet the objectives of the CCS Programme which are designed to prove both risky technologies as well established ones, apparently expensive innovations as well as maturing lower cost techniques. It is likely similarly to fail in the case of a RES portfolio.

The scheme needs to be geared to providing the best-value portfolio outcome. It is possible to have value competition on the basis of agreed performance metrics, but only within a portfolio of projects that meets the objectives laid out in this section (and similar ones for a RES portfolio). Where projects compete with each other for a role in the portfolio they should be chosen on the basis gives the lowest total cost to the CCS Programme. And we expect, perhaps pessimistically, that funding constraints may mean that the whole CCS Programme cannot be fulfilled. So competition runs at several levels:

- Where two projects are offered that demonstrate the same or similar technologies, the one demanding the lower funding from NER (and EEPR) is chosen.
- Where there is no such competition a judgement may have to be made that the given technology to be tested has to be sacrificed to shortage of funding.
- There is the possibility of “shuffling the pack” of eligible projects to capture maximum demonstration benefit per euro, including negotiation in some cases for more sponsor/Member State funding, reconfiguring projects (one unit instead of two?) etc.

We propose that Project Developers be asked to submit extensive detail on the expected costs and financial performance of their projects. This will help to prevent “gaming” of the competition.

FROM POLLUTION TO SOLUTION : ABOUT THE BELLONA FOUNDATION

The Bellona Foundation is an international environmental NGO based in Norway. Founded in 1986 as a direct action protest group, Bellona has become a recognised technology and solutions-oriented organisation with offices in Oslo, Brussels, Washington DC, St. Petersburg and Murmansk. Altogether, some 60 engineers, ecologists, nuclear physicists, economists, lawyers, political scientists and journalists work at Bellona. Bellona endeavours to identify and implement sustainable solutions to the world's most pressing environmental problems. These include the fight against global warming, the environmental impact of the oil and gas industry in Europe and Russia, and the cleanup after the legacy of the Cold War in Russia. In all of its pursuits, Bellona understands that it is important to cooperate with scientific, business and political leaders to find more ecologically sound methods of operation. Bellona strongly believes that through such cooperation, new solutions to environmental problems can be found and implemented.

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