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Editor's note

Twelve years ago the inclusion of the CDM and International Emissions Trading saved the Kyoto negotiations. Before 'Kyoto', negotiations had taken place within the framework of the Ad-hoc Group on the Berlin Mandate and many negotiators were very pessimistic about the outcome of COP-3. Eventually, the Kyoto Protocol was adopted, but it only entered into force in 2005.

After his return from Kyoto, the leader of the Dutch delegation, IJvo de Boer, hosted a meeting at which he explained to Dutch stakeholders why things had gone as they had and which countries had made decisive moves. The way he explained this gave us the feeling that negotiations were exiting and I couldn't understand why others had compared negotiations with glaciers: "you know that they're moving, but you can't see it".

Since 1997 negotiations have become much more complex. Nowadays, IJvo de Boer is UNFCCC Executive Secretary and his task is immense. As a token of the present complexity of negotiations, some people compare the sizes of the negotiations texts: over 200 pages now compared to less than 50 pages then. From an optimistic angle one could argue that somewhere in that thick document there should be a solution for a successful negotiation outcome.

At 'Kyoto' there was an issue about whether non-Annex I countries would be willing to adopt voluntary abatement commitments. However, the clear distinction between Annex I countries with quantitative commitments and non-Annex I countries without such commitments remained intact. The deal was settled by allowing industrialised countries to achieve commitments through flexibility mechanisms at a much larger scale than initially expected. The CDM was the clearest example of this compromise.

It is such miracles that keep the hopes alive that something positive will come out of 'Copenhagen'. Such a breakthrough could come from the discussions on REDD, measures and funding for adaptation, and NAMAs and NAPAs. A key element in each of these areas is the need for an effective collaboration between developing and developed countries.

Another breakthrough could come from the debate on low-carbon technology transfer to developing countries. This debate brings negotiations to the core of the climate issue: how to accelerate low-carbon technology innovation, transfer and application in both developed and developing countries? This requires visions on long-term developments in countries and eventually strategies with concrete policy measures. The *Handbook for Conducting Technology Needs Assessments* is an example of how the development of such low-carbon visions could be supported. In every possible outcome of the technology transfer debate, co-operation between developed and developing countries is needed and how this will be arranged could be an important outcome of 'Copenhagen'. Just as the CDM facilitated co-operation between developed and developing countries twelve years ago.

So far, most COP sessions have shown that preparation difficulties do not imply that a successful negotiation outcome is impossible. It may be difficult though to decide on when 'Copenhagen' will be a success. For instance, according to the EU, COP-15 is the end of a process, while the US delegation have said that 'Copenhagen' is only the beginning of a process.

Both visions are probably correct, but it would be very disappointing if the 2007 Nobel Prize momentum would be lost in Copenhagen.

Wytze van der Gaast

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Final Steps Towards a Post-2012 Climate Policy Regime

With the UN climate conference in Copenhagen just a few months away, and Bangkok climate talks just finished, the turmoil on the international political scene begins to grow. Shuffles in climate policy are observable in several countries, including the USA and China. This article discusses some of the recent developments in the field of mitigation measures. In the next JIQ issue, an overview of the overall Climate Talks process will be presented, including the outcomes of the meetings in Bangkok, Barcelona and Copenhagen.

Waxman-Markey bill

During the recent visit to the USA, German Chancellor Angela Merkel expressed her wish that the USA should take the lead and set the example for international climate policy in the wake of a new climate agreement. Earlier this year, the House of Representatives approved the *American Clean Energy and Security Act* ('climate bill,' by representatives Waxman and Markey) after many changes and with a small majority (219 to 212). The next step in the legislative process is to gain the approval of the Senate, where it is still unclear if the voting will take place before the Copenhagen meeting in December.

The draft 'Climate Bill' proposed that domestic GHG emissions in the USA would be reduced to 1990 levels by 2020 and to 80% below 1990 levels by 2050. After the revision by the House of Representatives, the cut in carbon emissions was set at 17% below 2005 levels by 2020, which is more or less in line with an objective to return to 1990 levels as US GHG emissions are presently approximately 17% higher than in 1990.

The 'Climate Bill' draft also envisaged a federal emissions trading scheme based on a cap-and-trade system. Within the context of the Regional Greenhouse Gas Initiative (RGGI) such a mandatory, market-based effort already exists in the USA based on a co-operation between ten Northeastern and Mid-Atlantic states. RGGI states will cap and then reduce CO_2 emissions from the power sector 10% by 2018.

US cap-and-trade scheme

In the 'Climate Bill' draft it was proposed that all GHG emission allowances would be sold to emission sources capped by the scheme through auctioning. However, 'Climate Bill' approved by the House states that 85% of the allowances will be given away for free and only 15% will be sold. The free permits are supposed to be distributed as follows: 15% to cement, steel and glass producers; 9% to local natural gas distributors, 3% to the producers of clean technology vehicles and 2% to oil refineries. The free permits will gradually be replaced with tradable ones as of 2026. A tradable permit to emit a tonne of CO_2 is expected to cost USD 13 in 2012. In order to create a gradual price increase, the number of allowances will gradually decrease.

The approved version of the 'Climate Bill' also foresees trade penalties for countries trading with the USA which do not set limits on their own GHG emissions. The bill also indicates that by 2020 at least 20% of national electricity production must originate from renewable sources.

Boxer-Kerry act

The next step in the process is a round of discussions on and a voting round on the 'Climate Bill' by the Senate. Early October, Senators Kerry and Boxer unveiled their "Clean Energy Jobs and American

Bangkok Climate Talks - 28 September - 9 October 2009

At the Bangkok Climate Talks sessions negotiators did not manage to reduce the size of the negotiation texts. However, a number of new ideas were proposed in an effort to define commitments for developed countries and mandatory actions for developing countries. Not much progress was made on post-2012 commitments for Annex I Parties, although some countries repeated their earlier announcements of GHG emission reduction targets. There was a heavy on an idea suggested by, a.o., Australia and the USA to prepare a framework on mitigation for all Parties with a common approach for monitoring, reporting and verification. Although the USA claimed that this proposal follows the principle of 'common but differentiated responsibilities', developing countries were critical as this approach would dilute the distinction between 'developed' and 'developing countries'.

Another heavily debated topic was whether a post-2012 climate regime would be based on the Kyoto Protocol, or that it would become a new agreement under the UNFCCC.

For a summary of the Bangkok Climate Change Talks, see Earth Negotiations Bulletin, http://www.iisd.ca/climate/ccwg7/

Power Act" which proposes, a.o, a 20% emission reduction target for the USA by 2020 below 2005 levels.

Whatever the outcome of the Senate discussions will be, according to a statement made by the White House's climate and energy co-ordinator, Carol Browner, it will be impossible to have the bill ready for being signed by President Obama before COP-15. She called the passing of the legislation a process 'on the most aggressive timeline possible'.[1]

There are three main steps that remain to be taken. First, the Senate will have to agree on the 'Climate Bill', which would in any way cause amendments to it. Second, once approved, the Senate version of the text must be reconciled with the version that passed the House of Representatives. Last but not least, the bill needs to be signed by the President.

Obviously, a positive signal from the Senate on climate legislation would be important information before Copenhagen, even if the President's signature would still be lacking.

China agrees to reduce carbon intensity

When speaking at the UN Secretary-General's Summit on Climate Change held on 22 September 2009 in New York, China's President Hu Jiantao announced that China would strive for reductions in its carbon intensity (CO_2/GDP) by 2020. Although no specific figures were given, the speech was considered the first time that the Government of China expressed willingness to take part in the global effort to combat climate change with possibly quantative measures.

Also during the last week of September, China's head of the National Energy Agency, Zhang Guobao, explained that within ten years wind energy is likely to overtake nuclear energy in China as a source of electricity. By 2020, electricity generation by wind energy is expected to amount to 100 GWh per year.

Russia and its Kyoto Protocol surpluses

Since the adoption of the Kyoto Protocol, there has been much debate about the assigned amount of the Russian Federation (and to lesser extent those of other countries with economies in transiton). As a result of the negotiations in Kyoto, Russia's quantitative commitment was to stabilise its GHG emissions to the level of 1990. In the meantime, actual emissions had fallen to much lower levels so that huge surplusses within Russia's assigned amount have resulted. For instance, in 2007, Russia's actual emissions were almost 34% lower than in 1990. Since Kyoto, many experts have expressed concerns about these surplusses flooding the international carbon market, thereby lowering carbon prices.

It will be interesting to see what Russia's position will be in a post-2012 climate regime. Russia has the legal right under the Kyoto Protocol to use its surplus assigned amount built up during 2008-2012 for complying with follow up commitments after 2012 (conservatively assuming that Russia's emissions will remain constant at 2007 levels, a tradeable surplus of well over 1 billion AAUs could emerge). Still, the question remains what target to adopt in a post-Kyoto regime.

Russia has officially announced a 10-15% emission reduction target compared to 1990 levels to be achieved by 2020. According to a study by Anna Korppoo and Thomas Spencer ("The Dead Souls: How to deal with the Russian surplus?", 2009), this target "neither reflects the country's efficiency potential, nor modelled trends". Korppoo and Spencer argue that Russia could commit to a target of approximately -30% below 1990 levels by 2020.

Japan: 25% below 1990 levels

At the above UN Climate Change Summit, Prime Minister Hatoyama of Japan announced for his country a GHG emission reduction target of 25% below 1990 levels to be achieved by 2020. Important policy measures to support reaching this target are a mandatory domestic emissions trading scheme and a feed-in tariff for production of electrity from renewable energy sources.

The domestic ETS is scheduled to start in April 2011, although details of the scheme are yet to be discussed. About a year ago, Japan started a voluntary ETS.

Mr Hatoyama has also made clear that the announced reduction target of 25% is conditional on the commitments that other 'major emitting' countries will accept. In 2007, Japan's GHG emissions were 7.8% above 1990 level, whereas the country's Kyoto Protocol commitment is -6%.

[1] http://communities.thomsonreuters.com

Moving from Technology Needs to Technology Strategies

Meetings to be conducted as part of the TNA Handbook field-testing process
16-18 November 2009 • Groningen, The Netherlands

On 6 June of this year, during the Climate Talks sessions in Bonn, an advanced document of the updated "Handbook for Conducting Technology Needs Assessments for Climate Change" was launched. The updated TNA Handbook has been developed by UNDP and the UNFCCC Secretariat, with support from the Climate Technology Initiative (CTI), under the auspices of the Expert Group on Technology Transfer (EGTT). Next to further streamlining the participatory process for assessing technology needs, the updated Handbook also suggests steps for accelerating low-carbon technology development, deployment and diff usion and how this could be incorporated within national visions on technology transfer.

As part of the process of testing of the updated TNA Handbook, UNDP and JIN will organize, in collaboration with the Ministry of Economic Aff airs of the Netherlands and with financial support from UNEP, two meetings in Groningen, the Netherlands, during 16-18 November 2009. The meetings are aimed at providing a dialogue space for participants to review/ discuss the content of the updated TNA Handbook (meeting 1) and to discuss how the outputs from the Handbook could support developing countries in formulating strategies for technology innovation in support of low carbon development pathways (meeting 2).

TNA Handbook download:
http://unfccc.int/ttclear/pdf/TNAHandbook_9-15-2009.pdf

> Meeting 1 – Consultation and Review of Updated TNA Handbook 16 -17 November 2009

This meeting will facilitate a discussion on the content of the updated TNA Handbook with a focus on:

- The *step-by-step guide* in the Handbook for prioritizing sectors and technologies in developing countries – both for mitigation and adaptation.
- Ways to facilitate *familiarization* of country stakeholders with new technologies, including access to up-to-date information on technologies (performance, fi eld experiences, costs, suppliers, etc).
- Ways to assess *technology barriers* in countries, enabling frameworks and capacity building needs in countries.

To this meeting climate policymakers, practitioners, and experts in climate, energy and development will be invited.

> Meeting 2 – Strategies for Technology Innovation in Support of Low Carbon Development Pathways - 18 November 2009

This meeting will take the TNA Handbook outputs as a starting point: *i.e.* portfolios with prioritized low carbon technologies, identified activities to accelerate technology innovation, and capacity requirements for these activities. Subsequently, a discussion will be facilitated on how this output can assist developing countries in formulating strategies in support of low carbon development pathways and in identifying capacity building needs.

The discussion will be organized around the following three items:

1. *Experience with low-carbon technology development programs.* What can be learned from existing energy transition and low-carbon technology development programs?
2. *Capacity building needs.* There will be a discussion on the capacity building needs for the development and implementation of technology strategies in support of national low carbon and climate resilient development actions.
3. *Way forward.* Finally, based on these insights in ongoing low carbon development activities and capacity building needs, a discussion will take place on what would be the way forward on strategies for technology innovation.

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GHG Monitoring and Accounting for Bio-Energy Projects

by Eise Spijker*

One of the main messages from Robert Socolow's 'technology wedges theory' is that within the range of energy technologies and services needed for reaching climate targets, there is hardly any technology (perhaps besides energy efficiency, tidal/wave and/or solar) that is not subject to some controversy. Examples are: nuclear, clean coal, CCS, large-scale hydro and wind energy. Their externalities could affect their eventual acceptibility. Another example of a technology that has been considered both promising and detrimental is bio-energy. This article will discuss the life cycle of an example bio-energy project and explore, a.o., GHG-related aspects for each part of the cycle.

Bio-energy as a hot topic

Bio-energy has been the subject of much debate on, for instance, the land-use impact of energy crop cultivation and the consequences of replacing 'food-for-fuel'.[1] Due to the increasing interest in renewable energy and related technologies, many enterprises have started to process and convert organic material from either cultivated, or existing residual/waste stocks. Although the concept of bio-energy seems straightforward, the variety and origin of feedstocks and the set of available conversion technologies, as well as the range of possible uses of bio-energy within a certain country context, is so large that one can hardly speak of common and standardised practice.

In order to feed the public/political debate on bio-energy with the best information possible and enable consideration of nuances and characteristics of individual bio-energy initiatives, it is important that tools exist for a transparant monitoring, verification and reporting on the performance of bio-energy projects. This enables third parties to assess projects on their sustainable development contribution and GHG emission reduction achievement. The first aspect has been addressed elsewhere in this issue in an article on the Gold Standard methodology by Frederic Rudolph (see pp. 8-9). GHG accounting modalities are discussed below

Life cycle analysis

With respect to the reporting, monitoring and verification of GHG benefits from bio-energy initiatives, the increasing number of carbon trading opportunities (both under cap-and-trade and offset schemes) will lead to a broad range of possible bio-energy systems with a wide variety of methodologies for calculating GHG emission reductions of such projects. In order to maintain a high quality level of accuracy of the reporting, it is recommended to develop standardised methodological procedures for reporting, monitoring and verification.

The Global Bioenergy Partnership (GBEP) in its recent report 'The GBEP common methodological framework for GHG lifecycle analysis of bioenergy' (2009) discusses such a framework that "is intended to provide a template for LCA [life cycle analysis, *ed.*] that is transparent and that can be applied to a wide range of bioenergy systems." The report indicates that there is no single methodology that covers all possible bio-energy systems. Instead, GBEP presents a methodological framework that can serve as a guideline for proper CO_2 accounting. It is not a prescriptive and predefined methodology with default project design, assumptions, parameters and values, so that the project context can be sufficiently taken into account.

Moreover, numerous methodologies and CO_2-footprint tools are available. However, the majority of these are either project specific, consider only a limited number of bioenergy systems, or apply specific assumptions and default values.

In their 2007 report 'The greenhouse gas calculation methodology for biomass-based electricity, heat and fuels', the *Working Group CO_2 Methodology* tackles a number of methodological issues and provides a rationale for the assumptions made for a selected number of conversion technologies in a set of biofuels and bio-energy chains. The discussion in this report basically confirms the case-specific nature and country context of using LCA for GHG abatement calculations.

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[1] See as an example the weblink < http://www.cmtevents.com/eventposts.aspx?feedid=463&ev=091021& > for a webinar titled "Is the Jatropha sector becoming a DotCom Bubble?" This conference provided insights on:
-"Re-evaluating your view of the Jatropha value chain to build a more viable business model.
- Avoiding the mistakes of early, hype-based Jatropha projects.
- Adopting a sensible approach to Jatropha cultivation and the business.
- Tying Sustainable practices to long-term Jatropha success."

Default vs. project-specific values

Recently, JIN has developed steps for applying LCA for bio-energy projects and to explore where GHG accounting steps can be standardised and where project context-specific rules need to be developed. It also analysed, through a sensitivity analysis, the impact of using default values on the overall GHG emission reduction effect. Below, this work is further explained by providing a simple overview of analysing and quantifying the GHG impact of a specific bio-energy project. Such a framework can assist in establishing a robust monitoring and accounting protocol. The project example described here is hypothetical.

Calculating bio-energy GHG effects: an example

This stylised project example considers production of upgraded biogas based on the digestion of an agricultural waste stream that is to be injected in to a natural gas distribution network in the Netherlands. In order to quantify the GHG performance of this project, it is important to describe the foreseen project activities in detail.

In this specific case, there is no conflict of land-use as the biomass is residual and would otherwise be left to decay on the land. As the project assumes a re-delivery of carbon and nitrogen embedded in the residues of the digester process on the land area, some direct and indirect losses/gains in the carbon and nitrogen stock in the soil can be quantified together with the associated enhanced/reduced oxidation of these nutrients into CO_2 or N_2O.

Sugarcane plantation ready for harvest, Ituverava, São Paulo State, Brazil. Photo: courtesy of http://en.wikipedia.org/wiki/Bioenergy

The next step involves collecting, transporting and storing the biomass, which results in GHG emissions (*i.e.* mainly transport). Storage of the biomass can involve many organisational and technological forms and is likely to be associated with certain process losses (*i.e.* inefficient collection, trans-shipment, degradation of energetic quality or physical state of the biomass during storage term, *etc*.). Providing a logistical planning for transport and storage (volumes stored when and where, mode of transport and transport energy use, load factors, *etc*.) of the activities taking place within the project boundary would facilitate the process of quantifying the associated project emissions.

The next step in the process is to select the appropriate parameters for the conversion process in order to produce a well-founded and objective estimate of the process efficiency and the process' GHG performance. Often bio-energy systems require some form of energy input (heat, fuel or electricity) to keep the process operational, so that energy penalties exist. In order to compensate for this, external energy sources can be used or the project developer can opt for the use of a certain percentage of its own bio-energy.

The optimal solution in terms of process design depends on a number of technological and commercial/financial factors. On the one hand, from a GHG-impact point of view, it might be rational to make use of internally generated bio-energy instead of grid energy with associated emission factors, while on the other hand, from an investors point of view, such a solution might lead to a an additional sub-optimal investment (own biogas turbine).

Misrepresentation

In the conversion process a series of technologies are used, such as biomass digesters, biogas upgrading technologies, as well as gas compression and gas transportation technologies. There is significant technological diversity with several (sets of) competing technologies, such as: (co-)digestion, torrefaction, pressing, distillation, gasification, (flash-)pyrolisis and a range of gas treatment and upgrading and compression technologies (*e.g.* based on membranes, absorption, adsorption and cryogenic processes). With such a wide range of technologies it is not difficult to imagine that working with default parameters and assumptions can in some cases provide a misrepresentation of the actual performance of a specific bio-energy project[2].

Provided that there are incentive schemes present that value the CO_2 performance of bio-energy projects, a project developer is triggered to consider low carbon technology alternatives. CO_2 crediting schemes, guarantee of origin schemes and/or subsidy schemes can provide such an incentive. The net GHG impact of the example bio-energy project is largely dependent on the end-use of the 'green' gas. A replacement of natural gas within the gas transport grid could be assumed as well as end-use of the gas in various sectors, such as transport, the build environment, and (de)centralised power generation. The specific end-use situation is crucial for calculating the emission reduction performance in the form of fossil fuel replacement.

In dedicated (or stand-alone) project designs the end-use situation is clear. However, in grid-connected initiatives and in the presence of monitoring and certification systems, projects can optimise their CO_2 revenues as, in essence, they can select the reference situation with the largest GHG avoidance impact.

The project example shows that when it comes to selecting the right parameters, process design and or end use reference (baseline) based on which a GHG performance claim can be made, project developers and consultants have a certain degree of freedom. Although this non-prescriptive nature of parameter selection seems to introduce a subjective element into GHG reporting and accounting, it also allows for a proper appreciation of specific technologies and country contexts.

Furthermore, beside parameter selection, there are numerous other ways to promote proper GHG accounting by creating transparent, coherent and standardised GHG reporting, monitoring and accounting protocols. When accompanied with codes and guidelines for proper parameter selection for bio-energy projects these protocols can significantly support the uptake of bio-energy technologies.

[2] On the other hand for those technologies cases where there is no validated proof of process and/or conversion efficiency (i.e. methane loss/leakage, etc.) default parameters and values can be very useful.

IEA World Outlook Excerpt Underscores Need for Ambitious Climate Policy

On 6 October of this year, in Bangkok, the International Energy Agency, in person of Director Nobuo Tanaka, published a special early excerpt of the World Energy Outlook 2009 for the Bangkok UNFCCC meeting: 'How the Energy Sector can Deliver on a Climate Agreement in Copenhagen.'

According to the report[1], in the absence of new initiatives to tackle climate change, global energy-related CO_2 emissions are expected to increase from 29 Gigatonnes (Gt) in 2007 to 40 Gt in 2020 (reference scenario). In order to limit the growth of the GHG concentration level in the atmosphere to 450 ppmv (considered the maximum level for limiting global average temperature increases to 2°C above pre-industrial levels), IEA estimates that energy-related CO_2 emissions need to peak by 2020 at 30.9 Gt and then to decline to 26.4 Gt in 2030.

In order to achieve this pattern, IEA has calculated an investment need of approximately USD 430 billion in addition to investments already foreseen in the reference scenario.

In terms of sectors, of the 26.4 Gt estimated in 2030 under the 450 ppmv scenario, 32% of the world energy-related CO_2 emissions are expected to be caused by power generation, 29% by the transport sector, 17% by industrial sectors, 10% by built environment, whereas other sectors, taken together, will be responsible for 11% of the emissions.

In order to bridge the gap between the reference scenario (40 Gt in 2030) and the 450 ppmv scenario (26.4 Gt in 2030), IEA expects the largest contribution from end-use energy efficiency and power plants (55%), use of non-biomass renewable energy technologies (12%), carbon capture and storage (10%), use of nuclear energy (9%), and use of biofuels (3%).

The IEA also explained that global energy-related CO_2 emissions are likely to reduce by 3% this year, which is partly due to the present global economic problems. This is also expected to result in a lower estimate of CO_2 emissions in the reference scenario for 2020 in comparison to the estimate in the *World Energy Outlook 2008*: a reduction of 1.9 Gt.

[1] http://www.iea.org/weo/docs/weo2009/climate_change_excerpt.pdf

Can the Gold Standard Reliably Ensure the Sustainability of CDM Projects?

by Frederic Rudolph*

The Gold Standard is a premium label for CDM/JI activities and for voluntary carbon credits. Its development was initiated in 2003 by the non-governmental organisations WWF, South-South North(SSN) and Helio International. A wide range of experts and stakeholders from different development organisations, e.g. the German Technical Cooperation (GTZ), and key actors of the carbon market were involved in the development of this standard.

The objective of the Gold Standard (GS) is to promote climate change mitigation activities that also yield a local development dividend by bringing about environmental, social and economic benefits and by minimising potential negative effects. As a market-based instrument, GS aims at putting a monetary value on these sustainability benefits. The assumption is that buyers will be willing to pay a higher price for CERs from projects with a certified exceptionally high quality.

At the same time, the conventional CDM pipeline is being criticised for hardly yielding any development dividend. On the contrary, several studies find that a number of CDM projects might even yield a negative local impact. Therefore, a number of NGOs have proposed that best practice of the GS should be carried over to the conventional CDM pipeline in order to strengthen the mechanism's overall contribution to sustainable development.

The Wuppertal Institute has conducted an in-depth analysis of the GS and five GS-certified CDM projects. The project analysis covered not only *ex ante* project design but also an assessment of the actual impact of the GS during project implementation, by interviewing project developers and local/ national stakeholders. The analysis is part of a study commissioned by the German Federal Ministry for the Environment on the further development of the CDM under a post-2012 climate regime. The question of the in-depth analysis was whether the GS procedures could be considered as sufficiently robust and applicable to the conventional pipeline.

The Gold Standard sustainability requirements

The GS sustainability assessment is essentially a set of 'Screens' that guide project proponents through the project development process. Firstly, GS only allows renewable energy supply or end-use energy efficiency improvement projects. For some project types, additional eligibility criteria have been stipulated, such as compliance with the latest guidelines of the World Commission on Dams for hydroelectric power plants with an installed capacity larger than 20 MW.

Secondly, project proponents have to consider sustainable development impacts. This is a key point that differentiates the GS from the conventional CDM pipeline and includes three sequential steps:

1. The project proponent has to apply the **UNDP safeguarding principles**, which are derived from the Millennium Development Goals. They encompass 'do no harm' principles with respect to human rights, labour standards and the environment.
2. The project developer must provide a detailed impact assessment in terms of sustainable development ('**sustainable development matrix**'). They have to score their project on environmental, social and economic indicators. They are required to select one parameter for each of the indicators given. For instance, the project developer may select NOx as a quantitative parameter for the environmental indicator 'air quality'. For GS eligibility the project must contribute positively to at least two of the three categories (environmental, social and economic) and be at least neutral in the third category.
3. The project developer has to submit a **sustainability monitoring plan**. This is used to verify *ex post* if the CDM project has indeed contributed to sustainable development as assessed *ex ante*. All non-neutral indicators must be monitored.

Finally, the GS demands a comprehensive stakeholder consultation. This includes at least two meetings, which have to be prepared and carried out in a non-technical manner. This is to be proven by detailed documentation. The GS requires specific agenda items to be included in the consultations, such as a discussion on monitoring sustainable development.

The current practice

We analysed five GS and found that they received very positive feedback from local residents, public authorities and other stakeholders. The projects

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rendered the following benefits:

- improvement of electricity supply through local power plants and electrification in rural areas;
- additional job opportunities for the local population linked with training and capacity building measures for the respective persons;
- implementation of sustainable land-use measures such as harvesting techniques and reforestation programmes;
- improvement of air, water and soil quality; and
- other benefits such as reduction of oil imports and increased tourism.

Evaluation of GS sustainability requirements

GS only allows renewable energy and end-use energy efficiency projects in order to focus efforts on projects that are seen as most important for climate change mitigation and most likely to contribute to sustainable development. However, such a positive list can be considered an arbitrary definition of sustainability, since there are certainly other project types that also contribute to sustainable development, such as sustainable waste management practices. The members of the Gold Standard Foundation acknowledge this.

The sustainable development matrix requires projects to contribute positively to at least two of the three dimensions of sustainability. According to Michael Schlup, director of the Gold Standard Foundation, the respective criteria are estimated in a "bottom-up review process", meaning that they are handled flexibly. In order to avoid unnecessary costs and to assure that the application is feasible, the project's proponents are not required to assess criteria that will obviously not be affected. Moreover, GS does not require to commission quantitative impact assessments, but settles on doing a plausible qualitative explanation of the potential impacts.

On this basis, it is clear that there is a certain degree of subjectivity involved in the matrix assessment. This was also confirmed by the interviews. But there may be a trade-off between objectivity and transaction costs, especially for a voluntary standard like the Gold Standard. Requiring detailed quantitative analysis of project impacts would substantially increase implementation costs and thus make using GS increasingly unattractive. The value of the matrix can therefore be seen in making project participants think about how their projects impact local conditions with regard to aspects that are of great importance, such as water quality and employment. It also serves to make the assessment transparent by requiring presentation in an easily accessible scoring format.

As CDM projects may significantly affect the livelihoods of local populations, GS organises a stakeholder consultation process that precisely stipulates who needs to be consulted, how to consult, how to present the information (*i.e.* in a non-technical manner, in local languages, *etc.*), how to document the consultation, *etc.* GS emphasises that local opinions are more important than external sustainability assessments. Therefore, GS has recently approved a project that includes mass-animal farming which received a positive feedback from stakeholders.

The sustainable development monitoring can be regarded a very innovative instrument, as it verifies afterwards what was expected beforehand. However, it is a relatively new instrument and therefore its practical applicability remains to be ascertained.

As for feasibility, all of the interviewed project developers and validators agreed that the additional effort required by GS was reasonable.

Conclusions

GS sets high requirements for CDM projects to contribute to sustainable development. It demands project proponents not only to respect precautionary principles but also to locally foster socio-economic benefits. Thus, GS demands more than a mere compliance of internationally acknowledged principles. The analysis of the five projects shows that these requirements are indeed being met in practice.

However, the evaluation is not completely transparent. This can mainly be explained with a trade-off between practicability and objectivity. This shortcoming may not become relevant as long as the GS is a voluntary quality standard backed by Greenpeace and WWF, *etc*. Moreover, due to the voluntary nature of GS, it can be assumed that mainly projects are entered for certification that would be sustainable in the first place. But the evaluation criteria would have to be much more precise in order to be applicable for the conventional pipeline. The simplest way to immediately improve the sustainability check of the conventional pipeline would be to adopt GS requirements for local stakeholder involvement.

The study "Further Development of the Project-Based Mechanisms in a Post-2012 Regime" of the Wuppertal Institute gives recommendations on how to improve additionality and how to foster the CDM's contribution to sustainable development.

Continuing the JI Mechanism after 2012

by the JI Action Group

At the September 2009 JI workshop in Kiev, Ukraine, the JI Action Group (JIAG) presented a Policy Paper on the future of Joint Implementation after 2012. JIAG is a consortium of JI practitioners, both project developers and buyers of carbon credits resulting from these projects (see.www.jiactiongroup.com).

The Policy Paper puts forward recommendations for improving JI and adapting it to the requirements and features of a post-2012 climate agreement. This paper complements the first JIAG Policy Paper[1] in which the role of JI in a post-2012 climate policy regime was highlighted. For COP 14 in Poznan (December 2008) JIAG also developed concrete suggestions on how projects could graduate from CDM to JI, how JI governance, baseline setting and additionality could be improved and how the mechanism could be strengthened to generate co-benefits and transfer of technology.

This paper elaborates on the role of the Joint Implementation Supervisory Committee (JISC) and the distinction between Track-1 and Track-2.

The essence of JI

JI is a project-based mechanism that operates in a capped environment. Resulting Emission Reduction Units (ERUs) lead to a cancellation of a country's Assigned Amount Units (AAUs). The essence of JI is that ERUs are issued after emission reductions have been generated. This distinguishes JI from Green Investment Schemes (GIS) where AAUs can be traded freely before any reductions have taken place.

Therefore, any JI project should meet two key criteria:

1. The projects should have a baseline and monitoring plan which is independently determined, and
2. The emission reductions should be monitored and independently verified.

Each JI project owner should be sure that both key criteria are met, whether the project is developed under Track-1 or Track-2. The current design of Track-1 projects leaves some doubt as to whether these criteria are met.

JI is the largest comprehensive regulated project-based mechanism in a capped environment. Other emerging mechanisms in a similar environment are:

- Article 24a of the amended EU ETS Directive allows EU Members States to issue credits for domestic measures implemented outside the ETS;
- In the USA the Waxman-Markey House bill allows significant offsets to be imported into a federal cap-and-trade scheme that is being proposed as part of the bill; the off-sets could originate from both domestic and foreign projects.

Another, voluntary, offset scheme is the Japanese Voluntary Action Plan on the Environment (VAP).

We believe that all project-based mechanisms should meet the above-mentioned two key criteria. We also think that the international carbon market would benefit from a harmonized offset standard that ensures: (i) environmental credibility; (ii) liquidity; and enables (iii) the indirect linking of Annex 1 emissions trading schemes. A fragmented system without such harmonized rules would result in legal trade issues, confuse the market, and threaten the environmental credibility of offsets (in a 'race to the bottom'). JIAG claims that JI is international offset standard that could serve as the basis of a harmonized international offset standard.

Two different tracks

When JI was negotiated, there were concerns whether all Annex 1 countries would be able to meet the JI eligibility requirements, *i.e.* being able to monitor annual GHG emissions and have a registry in place. Therefore, a hybrid system was put in place with two different tracks:

- JI Track-1: the host country complies with eligibilty requirements and can design Track 1 verification procedures as is deemed suitable.
- JI Track-2 for those countries not eligible for Track 1. The JISC was created to supervise JI Track 2 projects only.

[1] The first JIAG Policy Paper "Joint Implementation Strategies for a Post-Kyoto World" (2009), is available at: http://jiactiongroup.com/publications.html.

While the current scrutiny may be overly restrictive for JI Track-2, Track-1 does not guarantee the compliance with the two minimum requirements explained above.

Although in the reality of both tracks thus far host countries meet the criteria discussed above and require independent determination of the baseline and independent verification of the monitored emissions reduction, in theory, a host country could issue ERUs for JI projects that have not monitored actual emission reductions. In that case, JI Track-1 would resemble IET or GIS emissions trading. We believe that in a post-2012 regime a clear line should be drawn between these two mechanisms so that a buyer of an ERU can be sure that this credit results from verified emission reductions, a certainty a buyer of AAUs will never have.

Governance and the role of the JISC

In a post-2012 regime, the COP/MOP should give a mandate to the JISC to supervise a system that ensures that the two key criteria for JI projects as explained above are met. Under this mandate, the JISC should formulate minimum requirements for all JI projects, thereby building further on its experience so far. The JISC would maintain its current supervising role whereas all project-specific supervision is delegated to Accredit Independent Entities (AIE).

The JIAG argues that the supervising mandate of the JISC for any JI project should be:

- to set standards for the establishment of baselines;
- to set standards for monitoring methodologies;
- to accredit independent entities; and
- to maintain, operate and supervise the procedures that are required to allow project developers to develop projects, have the reductions verified and receive the ERUs.

The JISC would also continue to register Track-2 JI projects. The reasons for project participants or host countries to develop projects under Track-2 could be:

- to save resources by relying on the international services of the JISC;
- to obtain more credibility for the JI project;
- to avoid issuance risk due to a host country losing eligibility; and
- to avoid issuance risk due to a host country not meeting the Commitment Period Reserve.

Additionality

JIAG argues that the necessarily subjective and thus controversial establishment of project additionality can be replaced by rules that ensure a conservative establishment of project baselines. The integrity of JI is guaranteed since for the issuance of one ERU the host country has to cancel one AAU. In addition, additionality is superfluous since the guidance on determining the baseline GHG scenario already sufficienctly addresses the additionality concept.[2]

Nevertheless, should the project participant or host country want to separately test additionality, then this could be integrated in the project, based on guidance issued by the JISC and assessed by the AIE.

Conversion and transfer of ERUs

Currently, the receipt of ERUs is subject to the host country's willingness and ability to convert AAUs into ERUs and transfer them. This creates a risk which forward buyers in the JI market presently consider a serious barrier. This risk can be reduced by allowing host countries to transfer an amount of AAUs to a dedicated JISC registry account upon issuance of the Letter of Approval. These AAUs could be equal to the expected amount of emission reductions in a given Kyoto crediting period as estimated in the Project Design Document. Upon positive verification of the emission reductions by an AIE, the JISC can convert and transfer ERUs to the account specified by the project participants. If emission reductions as estimated in the PDD do not mature or are not positively verified, the JISC can periodically return AAUs to the host country account.

Members of the JISC

The JISC is the governing body of JI and should therefore consist of representatives from Annex 1 countries and countries that choose to graduate to Annex 1 for the post-2012 period. By definition, JI projects take place in Annex 1 countries having a commitment under Annex B. Contrary to the CDM, JI operates in a capped environment and there is no risk that the transfer of ERUs inflates the emissions that are capped under the Kyoto targets listed in Annex B.

This makes JI a mechanism that should be governed by Annex 1 parties and by parties that decide to accept a clear cap on its GHG emissions for the post-2012 period.

[2] See Guidance on criteria for baseline setting and monitoring, version 01, in particular paragraph 10, 11, available at http://ji.unfccc.int/Ref/Documents/Baseline_setting_and_monitoring.pdf

First Romanian JI Track I Project Operational: The emergence of an ex-post EU ETS-based CEF

By Wytze van der Gaast*, Sietske Boschma** and Zsolt Lengyel**

Earlier this year, the Government of Romania issued a Letter of Approval for a hydro power JI project. This is the first project established under the Romanian JI Track 1 procedures. For its baseline a CEF is calculated using verified ETS data. The project consists of nine units across the country.

First JI Track I Project Romania

On 12 January of this year, the Romanian National Committee for Climate Change suggested to the Minister of Environment to issue a Letter of Approval (LoA) for the Hidroelectrica Hydropower Development Portfolio Track I JI project, which the project subsequently received. This project is the first JI Project which is approved under the Romanian Track 1 procedures. The ERUs originating from this project will be purchased by the Netherlands Government. A special feature of this project is that its baseline is determined on an *ex post* basis, thereby using verified CO_2 emissions data of Romanian electricity generating installations covered by the EU ETS. This implies that the carbon emission factor (CEF) for each year of the project is calculated after publication of the verified ETS in the following year.

The establishment of an EU ETS-based precise CEF may have implications beyond grid-connected JI projects as it could support activities to measure the effectiveness of energy efficiency and energy saving policies and measures in the country. This aspect of the CEF therefore deserves more attention and work on this is in progress (see also below in this article). The CEF method used for this project could thus be a practical tool for policy makers for planning and evaluating their policy choices.

The Hidroelectrica Hydropower Development Portfolio Track 1 JI Project aims at developing nine new hydropower plants, which will be located in different hydrographic basins in Romania. The project has started in 2008 with the construction of the first plants and it will be completed by 2011. During 2008, the project design document was prepared and early this year, the project a LoA (as described above). Eventually, upon project completion, 278.4 MW hydropower capacity will have been installed, which will be 5.18% of Romania's total hydro-based electricity capacity (equivalent to 1.3% of Romania's annual electricity output).

The project will be carried out under the Romanian Track I Procedures (based on the Ministerial order No. 297 dated 21 March 2008, Romanian Ministry of Environment, ME). Romania has been a Party to the UNFCCC since 1994 and it ratified the Kyoto Protocol in 2001. Under the Kyoto Protocol, Romania has a commitment to reduce its GHG emissions by 8% below its 1989 level during the period 2008-2012. According to Romania's National Communication to the UNFCCC of 2006, the country's GHG emissions in 2004 were approximately 33% below the Kyoto Protocol target. Table 1 below shows the share of different energy technologies in Romania's electricity production for the years 2004-2007.

From the table it becomes clear that during the period 2004-2007 the variation in hydropower (largely weather-related) was mainly covered by adjustments in the production of coal and natural gas-based

Table 1 - Shares in Romania's grid-connected electricity production of power production technologies (%)

	2004	2005	2006	2007
Coal	37.55	35.80	39.57	41.69
Hydropower	31.61	37.10	32.02	25.80
Natural gas	16.01	14.07	16.69	17.42
Nuclear energy	10.07	9.57	9.20	13.10
Crude oil & petroleum	3.26	2.68	1.83	1.11
Conventional fuels	1.50	0.75	0.68	0.89

Source: ANRE Annual report *Date Statistice Aferente Energiei Electrice*, 2004-2007

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electricity. This fossil fuel-based production capacity has therefore been functioning at the margin of increasing production when hydropower output was lower and of reducing production when hydropower output was higher. Since 2007 Romania's nuclear power capacity has increased by 700 MW to 1400 MW so that as of 2008 approximately 20% of Romania's grid-based electricity will be nuclear based.

Romania has been an active country in terms of JI collaboration. It signed 10 Memoranda of Understanding on JI co-operation with JI investor countries: Austria, Denmark, France, the Netherlands, Norway, Sweden, Switzerland, Italia, Finland, and World Bank. Presently, 15 JI projects have been approved and another 20 JI projects in Romania are in the pipeline at different stages of the project cycle for implementation.

Description of the JI project units

The following units are covered by this JI project:

- Dumitra hydropower project (HPP)
- Bumbesi HPP
- Nehoiasu HPP
- Firiza I + II HPP
- Râul Alb HPP
- Plopi HPP
- Racovita HPP
- Rastolita HPP
- Robesti HPP

These HPP units, with the exception of Dumitra and Bumbesti HPPs, which were approved by a Governmental Decree in 2003, were all initially approved by the Government of Romania during the 1980s. However, the actual development of the investment and construction works took place at a very slow speed if they were not just stopped. The JI project ensures that the construction of the nine hydropower units in the project will take place during 2009-2011.

From a national energy perspective, such as reflected by Romania's latest national energy strategy, further expansion of the hydropower capacity can be expected for the future. However, with the recent increase (doubling) of the nuclear power capacity and the flexibility in the output expansion (and reduction) of coal and natural gas-fired power plants (thermal plants on average operate at around 57% of their full capacity) no strong short-term incentive existed for Hidroelectrica to increase its hydropower capacity. Nonetheless, the recent plans for vertically integrating key production facilities (nuclear, fossil and hydro plants) and the network backbone place more emphasis on low-cost, domestic generating sources, including hydro-power extensions.

Baseline methodology

The 'Hidroelectrica Hydropower Development Portfolio Track 1 JI Project' belongs to the category of projects which deliver electricity to the power grid that would otherwise have been generated by operation of grid-connected power plants and by the addition of new generation sources. The project is a so-called greenfield project which creates new capacity on sites where formerly no power production took place. In order to determine a baseline emissions scenario for this project, an average CO_2 emission factor (CEF, expressed in gCO_2/kWh) will be calculated for the power grid of Romania.

However, contrary to the ACM0002 methodology that is usually used for similar projects under the CDM, for this project the CEF will be calculated on an ex post basis using data verified for Romanian electricity generation installations covered by the EU ETS. This data set can be considered an accurate representation of the composition of the Romanian grid-connected power production capacity as it contains both installations that have been operational for a long time (e.g. over 20 years) and those that have been installed during recent years. Romanian installations have been part of the ETS since Romania's accession to the EU on 1 January 2007.

The use of Romanian ETS installations' data for the baseline calculations is that these installations produce power mainly with fossil fuel combustion (that is the reason why they have been included in the ETS in the first place). It is common practice that a country's power production capacity is as big as the highest annual peak in electricity demand, so that throughout the year there is excess capacity. Power plants are operated in different modes with nuclear energy and run-of-river hydropower plants normally being operational as many hours as possible because of their relatively low operational costs. Fossil fuel based plants, instead, are usually modulated depending on electricity demand developments while securing electricity supply. For the latter plants, it

[1] SAVE II PROCHP, 2003. Promoting CHP in the Liberalised Energy Markets - Outline and Recommendations, with a case-study on: Romania – CHP in the Liberalised Market, http://www.kape.gov.pl/PL/Programy/Programy_UniiEuropejskiej/SAVE/aP_PROCHP/Promoting_CHP_in_Liberalised_Energy_Markets.pdf

[2] COGEN Romania: http://www.cogen.ro/

[3] ibid.

could generally be assumed that the higher the fuel costs and the lower the energy efficiency, the higher will be their variable costs and, therefore, it will be more attractive to reduce their operation when new capacity becomes available.

One further specific aspect that needs to be considered in this baseline methodology is how to deal with CO2 emissions that originate from Combined Heat and Power (CHP or co-generation) plants. Within the context of Romania, most CHP plants are used for district heating.[1] Until 2002, heat was mainly produced by district heating and CHP plants owned by Termoelectrica. As part of the liberalisation of the Romanian energy market, several Termoelectrica district heating and CHP plants have become independent, with in many cases municipalities as single shareholder.[2]

An important general problem for district heating and CHP plants during the process of energy market liberalisation was that many households decided to disconnect from the centralised heating systems, because of increasing fuel prices, poor status of the heat distribution systems and, as as consequence, unsecure supply of gas and heat, and lack of metering for individual measurement of heat consumption. For CHP-based district heating this rate of disconnection could range from 3 to 18% of total apartments.[3] This led to the closure of several CHPs in smaller communities. Nowadays, 5.5 million inhabitants are connected to residential district heating systems (including CHP). The lack of differentiation between residential and industrial gas consumers, the overdue sate subsidies for district heating plants, and the generally oversized distribution networks create a challenging environment even for the most efficient CHP producers. However, there are also encouraging signs as efficient CHP producers are reconnecting an increasing number of public buildings.

The complexity with CHP plants is that when, irrespective of the reason for it, a plant delivers less electricity to the grid, there is still a heat demand that needs to be met. A typical CHP plant produces heat for baseload heat demand (*e.g.* hot water during the summer) so that additional heat-only boilers are needed for meeting peak-load heat demand. Should a CHP plant's delivery of electricity to the grid be reduced and in combination with that the heat production reduced, then extra heat needs to be produced elsewhere in order to be able to meet the municipality's baseload heat demand, which would still cause emissions of CO_2.Therefore, calculating CO_2 emissions in terms of kWh of electricity produced and including this emission factor in the baseline would not be a conservative approach.

With a view to the above, and in order to be conservative, CHP plants with a preferential status in the dispatch order (by Energy Efficiency law – no. 199 / 2000, CHP for district heating has guaranteed access to the grid) will be left out of the baseline as they are unlikely to become marginal plants due to a JI project.

Calculating the baseline CO_2 emission factor

For the calculation of such a modified (i.e. based on marginal technologies) grid-connected CO_2 baseline emission factor, the following data are needed:

- The verified CO_2 emissions data of Romanian power sector installations in the ETS that operate at the margin. These data are published on the published on the Internet site of ME (between 1 May and 30 June of the following year) and are freely accessible.[4]
- Annual electricity supply to the grid by each of the ETS installations operating at the margin.

Combining these two data sources results in an annual CEF, which will be made publicly available by ME. For this annual ex post calculation, **a CO_2 Emission Factor Data Collection Protocol** has been developed which establishes a working relationship with National Environmental Agency (NEPA) and ANRE under the co-ordination of the ME and the Ministry of Economy and Finance. The first year for which the baseline will be prepared is 2009 based on data that will become available during the first six months of 2010. Subsequently, in 2011, 2012 and 2013 baseline emissions will be calculated for 2010, 2011, and 2012, respectively.

This ex-post CEF could be used for establishing the various Romanian GHG scenarios that Romania is obliged to develop and report to both the EU and the UNFCCC. By the time of the next submission of GHG scenarios – early 2011 – the newly established CEF will have been available for two consecutive years. The Dutch Government is working together with ME and NEPA to improve both the GHG scenarios and the CEF itself. This cooperation is carried out within the framework of the so-called G2G (Government-to-Government) programme financed by the Dutch Ministry of Housing, Spatial Planning and Environment and involves SenterNovem, JIN and Ecofys from The Netherlands.

4 http://www.eu-ets.ro; as well as on the CITL Internet site of the European Commission: http://ec.europa.eu/environment/climat/emission/citl_en.htm

Reports

Stoft, S., 2009. The CDM and Sectoral Crediting Mechanisms: Costs, Rents, and National Commitment Incentives, Carbononomics Consulting, stoft.com.
A Sectoral Crediting Mechanism (SCM) shows promise as a means to encourage the transition from the CDM to more efficient climate policies. However, the paper argues that as an open ended program, an SCM would discourage financial commitment by developing countries. Hence, a second transition, from profitable SCM programs to financial commitments, needs to be negotiated before an SCM is adopted.

Herren, M., 2009. Facing Destruction without Representation? Low-Power Groups in Climate Negotiations on Post-Kyoto CDM, Master's thesis at School of Geography and the Environment, University of Oxford, CD4CDM Working paper no.9.
This paper discusses the importance of effective policy outputs from current climate negotiations for poor countries in the South. Presently, these countries' activities in the climate forum are strongly related to the positions taken by the G77&China. This paper reports on a number of case studies which have analysed the pre-negotiations on Post-Kyoto CDM and how low-power country groups are able to influence current negotiations in order to promote their interests and foster their role within G77&China.

Tawil, N., 2009. The Use of offsets to Reduce Greenhouse Gases, Congressional Budget Office (CBO), August 2009, www.cbo.gov/link/cc
To estimate the effect of offsets under the *American Clean Energy Security Act* (ACESA), the US Congressional Budget Office (CBO) calculated the impact of a carbon offset scheme on the costs of introducing more clean energy technology in the USA. CBO estimates that, by the year 2030, 52 percent of the required reduction in domestic emissions could be achieved through domestic and international offsets.

The effect of offsets on the cost of achieving the emission reductions specified in ACESA can be illustrated with reference to a specific year. It is estimated that in the reference case, ACESA would cost USD 248 billion (net) in 2030. With an offsets program, the net cost in the USA for the program would USD 101 billion — about 60 percent less than if offsets were not allowed. Without offsets, the price of an allowance would be USD 138 per ton, and auction revenues would be USD 474 billion; whereas with offsets, the allowance price would be only USD 40 per ton and auction revenues, USD 136 billion.

Curnow, P. and G. Hodes, 2009. Implementing CDM Projects: A Guidebook to Host Country Legal Issues, Baker & McKenzie and UNEP Risoe Center, www.cd4cdm.org/Guidebooks.htm.
This Guidebook addresses a wide range of legal and regulatory issues arising from the domestic laws, regulations and policies of CDM Host Countries that can affect the development and implementation of CDM projects. As a capacity building tool, the primary audience of this Guidebook is therefore climate change policymakers and CDM project developers in developing countries; however, carbon investors will find it of equal interest. The Guidebook illustrates some Host Country laws that specifically address the CDM, as well as how general domestic legal regimes may impact or inhibit CDM project implementation, such as:

- property rights;
- environmental and planning laws;
- investment and taxation laws; and
- financial services regulations.

The Guidebook further seeks to demystify the myriad, complex issues surrounding the domestic implementation of CDM.

Asuka, J., 2008. Comparative Evaluation and development of the Carbon Credit Utilization Policies of the Japanese Government: Japan's Domestic Emission Trading Schemes and Kyoto Mechanism Credit Acquisition Program, ***Environmental Economics and Policy Studies*****, Vol. 3, January 2009, Society for Environmental Economics and Policy Studies,**
e-mail: asuka@cneas.tohoku.ac.jp.
This paper evaluates a number of carbon trading schemes for Japan from the viewpoints of policy formulation process, allocation method, cost-efficiency and impacts on the achievement of the target defined in the Kyoto Protocol. The study concludes, a.o., that: the difference in costs between the credit acquisition from abroad and domestically may not be as large as expected; and system design of the domestic mitigation scheme will have a big impact on the achievement of the Kyoto target both for the large companies in Japan and for Japan as a country.

The **Joint Implementation Quarterly** is an independent magazine with background information about the Kyoto mechanisms, emissions trading, and other climate policy issues. *JIQ* is of special interest to policy makers, representatives from business, science and NGOs, and staff of international organisations involved in climate policy negotiations and operationalisation of climate policy instruments.

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Abbreviations

AAU	Assigned Amount Unit
Annex A	Kyoto Protocol Annex listing GHGs and sector/source categories
Annex B	Annex to the Kyoto Protocol listing the quantified emission limitation or reduction commitment per Party
Annex I Parties	Industrialised countries (OECD, Central and Eastern European Countries, listed in Annex I to the UNFCCC)
Annex II Parties	OECD countries (listed in Annex II to the UNFCCC)
non-Annex I Parties	Developing countries
CCS	Carbon Dioxide Capture and Storage
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction (Article 12 Kyoto Protocol)
COP	Conference of the Parties to the UNFCCC
DOE	Designated Operational Entity
DNA	Designated National Authority
EGTT	Expert Group on Technology Transfer
ERPA	Emission Reduction Purchase Agreement
ERU	Emission Reduction Unit (Article 6 Kyoto Protocol)
EU ETS	European Union Emissions Trading Scheme
EUA	European Union Allowance (under the EU ETS)
GHG	Greenhouse Gas
IET	International Emissions Trading
ITL	International Transaction Log
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
KP	Kyoto Protocol
LULUCF	Land Use, Land-Use Change and Forestry
MethPanel	Methodology Panel to the CDM Executive Board
MOP	Meeting of the Parties to the Kyoto Protocol
PIN	Project Information Note
PDD	Project Design Document
SBSTA	UNFCCC Subsidiary Body for Scientific and Technological Advice
SBI	UNFCCC Subsidiary Body for Implementation
TNA	Technology Needs Assessment
UNFCCC	UN Framework Convention on Climate Change

JIQ Meeting Planner

12-13 October 2009, London, UK
Accelerating Change in the Global Voluntary Offsets Market.
Contact: Santosh.Sharma@greenpowerconferences.com

2-6 November 2009, Barcelona, Spain
Resumed ninth session of the AWG-KP and resumed Seventh session of the AWG-LCA
Contact: http://unfccc.int/meetings/items/2654.php

16-18 November 2009, Groningen, The Netherlands
Meeting on "Strategies for Technology Innovation in Support of National Actions", in conjunction with the Energy Delta Convention 2009.
Contact: Wytze van der Gaast, JIN, Groningen, The Netherlands, tel. +31 50 5248430, e-mail: jin@jiqweb.org

7 December to Friday 18 December 2009, Copenhagen, Denmark
COP 15 and CMP 5
Contact: http://unfccc.int/meetings/items/2654.php

25-29 January 2010, Washington, D.C., USA
International Climate Change Obligations and Opportunities Seminar
Contact: Info@ili.org