

Promoting Renewable Energies under the CDM

Combining National Quotas in Europe and the CDM

Commentary

Sven Bode

Hamburg Institute of International Economics (HWWA)

Neuer Jungfernstieg 21, 20347 Hamburg (Germany)

email: sven.bode@hwwa.de

phone: +49 40 42834-356, fax: +49 40 42834-451

Abstract

In the context of combating climate change renewable energies are considered to play an important role. As these energies are currently not fully competitive compared to conventional power generation technologies, (minimum) quotas have been proposed as one means overcome this problem. However, when implementing any instruments on the national level, one should keep in mind that the efficiency of most types of renewable energies is dependent on the location. Thus, leaving the nation perspective and investing abroad may result in improved efficiency. Against this background the integration of the CDM into the European renewable energy policy is proposed.

Renewable Energies in Europe

Among a number of different actions to reduce greenhouse gas emissions and to meet the EU Kyoto-target of minus 8 % compared to the 1990 level, the European Parliament and the Council have enacted a directive on the promotion of electricity produced from renewable energy sources in the internal market (EU 2001). I refer to this kind of electricity as renewable energies (RE). An overall indicative RE-target of ~ 22 % of the total electricity consumption within the EU by 2010 has been set. In addition indicative national targets have been agreed upon ranging from 5.7 % for Luxembourg to 78.1 % for Austria. In an initial phase the member states are free to choose the way of how to achieve their targets. They only have to meet some reporting requirements. A lot of different instruments exist for promoting RE as for example feed-in tariffs, tenders or systems of tradable permits. For more information see for example Meyer (2003) or Nielsen and Jeppesen (2003). The directive is, however, not only concerned with reductions of GHG emission. Other objectives as for example the creation of local employment, increase of energy security and increase of energy diversification are also described (EU 2001, first paragraph).

When talking about RE schemes one should keep in mind that the yield and thus efficiency is mostly dependent on the location of the RE-device.¹ For example, direct horizontal radiation, which correlates with the energy yield, strongly differs between countries. Inefficient investments can be avoided, if a system is put into place that provides incentives to invest at most favourable sites even if they are abroad. An option to resolve this site-dependency is the introduction of an international trading scheme for green certificates.

True that there are examples where green certificate schemes did not work as desired, as for example the one in Ireland and the UK. The actual set-up² in these particular cases is one important reason for the poor performance (Mitchell et al. 2006). But there are also good experiences as for example the so-called RECS system.³ Under this scheme several millions of certificates were generated in the last years (RECS 2005, p. 37-38). A functioning system like this could be used to fulfil national targets (RECS 2005, p. 18- 20). Another indirect

¹ Regarding yield, a biomass-fired plant is an important example for a site-independent RE-technology.

² With regard to the risks to be borne by the RE-project operator.

³ Different private actors from several European states grouped voluntarily together and created a good and functioning scheme for trading green certificates (for more information see <http://www.recs.org/>)

example that quota systems involving RE work is the clean development mechanism. It is discussed in the next section.

The Clean Development Mechanism

As a vast body of literature on the different aspects of the CDM exist (Bode and Michaelowa 2003, Chomitz 1998, Kenneth M. 1998, Kolshus et al. 2001, Lazarus et al. 2000), no in-depth discussion is necessary at this point. It is only important to recall that

- RE-projects are good candidates for the CDM
- The yield (kWh) has to be monitored and verified anyway
- Certified Emission Reductions (CER) are issued after verification which are of value for member states of the EU (and other states)
- The CDM is supported within the EU regardless of whether or not the Kyoto-Protocol enters into force (see latest proposal of the “linking directive” EU Council 2004)

The number of CDM projects is increasing considerably as shown in Figure 1.

Insert Figure 1

One should note that for issuing the so-called certified emissions reductions (CER) for CDM projects constant monitoring by independent parties is necessary. In the case of RE the quantity of electricity produced is the most important parameter to monitor.⁴ Reliable information on green electricity production is thus an inherent by-product of the CDM.

Combining RE quotas and the CDM

Against the background of the renewable energy policy in Europe and the CDM one may think of combining these two. This could be done as follows: The quantity of electricity (kWh) corresponding to the national quota would be put out for tender. Project developers from within and without the member state would be allowed to bid. The responsible authority would choose the cheapest offers to meet the total target. This in turn would result in a competition between both locations and technologies. In case a government wants to support a technology for whatever reason (e.g. low competitiveness compared to other RE due to early stage of development) it could decide to set sub-targets for different technologies. For

⁴ Multiplying the quantity produced by the specific emission reduction per kWh gives the total reduction.

example, an overall target of 12 percent could be divided into (a minimum of) 4 percent for photovoltaic power, 2 percent for geothermal power and the remainder for all others. In case a RE-CDM project wins under the tender, the operator would be required to surrender a proof regarding the quantity of electricity produced, which is available for CDM projects anyway, as well as the CERs from the project to the member state.

Depending on the costs per kWh generated and the specific emission reduction per kWh there is a potential for increasing the costs for meeting the carbon target. Assume that a RE CDM project wins in a tender against a national RE project but that the cost difference is very small. Assume further that the RE CDM project delivers only much less emission reductions than the national RE project. In this case, the costs for meeting the emission target may increase whereas the RE targets can be met less costly. Answering the question which of the two effects might be prevailing is out of the scope of this paper.

Conclusion

Approving RE-CDM projects for fulfilling renewable energy quotas in Europe as described above would

- help to meet the European RE targets less costly without the need for the development of a new RE regime for projects outside the EU as it could base on the CDM rules
- help to meet Europe's Kyoto-targets
- support developing countries in getting on a more sustainable energy supply track
- not create local employment within Europe
- not increase energy security within Europe
- not increase energy diversification within Europe.

Although it might be difficult to resolve this trade-off it may be worthwhile to discuss this idea in more detail.

References

Bode, Sven; Michaelowa, Axel (2003) Avoiding perverse effects of baseline and investment additionality determination in the case of renewable energy projects, in: *Energy Policy* 31, p. 505-517

Chomitz, Kenneth M. (1998) BASELINES FOR GREENHOUSE GAS REDUCTIONS: PROBLEMS, PRECEDENTS, SOLUTIONS, Development Research Group, World Bank

EU (2001) DIRECTIVE 2001/77/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 September 2001 on promotion of electricity produced from renewable energy sources in the internal electricity market in: *Official Journal of the European Communities*, 27.10.2001

(EU 2004) DIRECTIVE 2004/101/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms, Official Journal of the European Union, 13.11.2004

Kolshus, Hans H.; Vevatne, Jonas; Torvanger, Asbjorn; Aunan, Kristin (2001) Can the Clean Development Mechanism attain both cost-effectiveness and sustainable development objectives? *CICERO Working Paper 2001:8*

Lazarus, Michael; Kartha, Sivan; Bernow; Steve (2000) Key Issues in Benchmark Baselines for the CDM: Aggregation, Stringency, Cohorts, and Updating, Tellus Institute and Stockholm Environment Institute, Boston

Meyer, Niels, I. (2003) European schemes for promoting renewables in liberalised markets in: *Energy Policy* 31, pp. 665-676

Mitchell, C; Bauknecht, D.; Connor, P.M. (2006) Effectiveness through risk reduction: a comparison of the renewable obligation in England and Wales and the feed-in system in Germany, in: *Energy Policy*, 34, pp. 297-305

Nielsen, Lene; Jeppesen, Tim (2003) Tradable Green Certificates in selected European countries – overview and assessment in: *Energy Policy* 31, pp. 3-14

RECS (2005) The Use of guarantee of origin, RECS International, retrievable on www.recs.org

UNEP/RISO (2006) CDM pipeline overview, retrievable on: www.cd4cdm.org

Figures

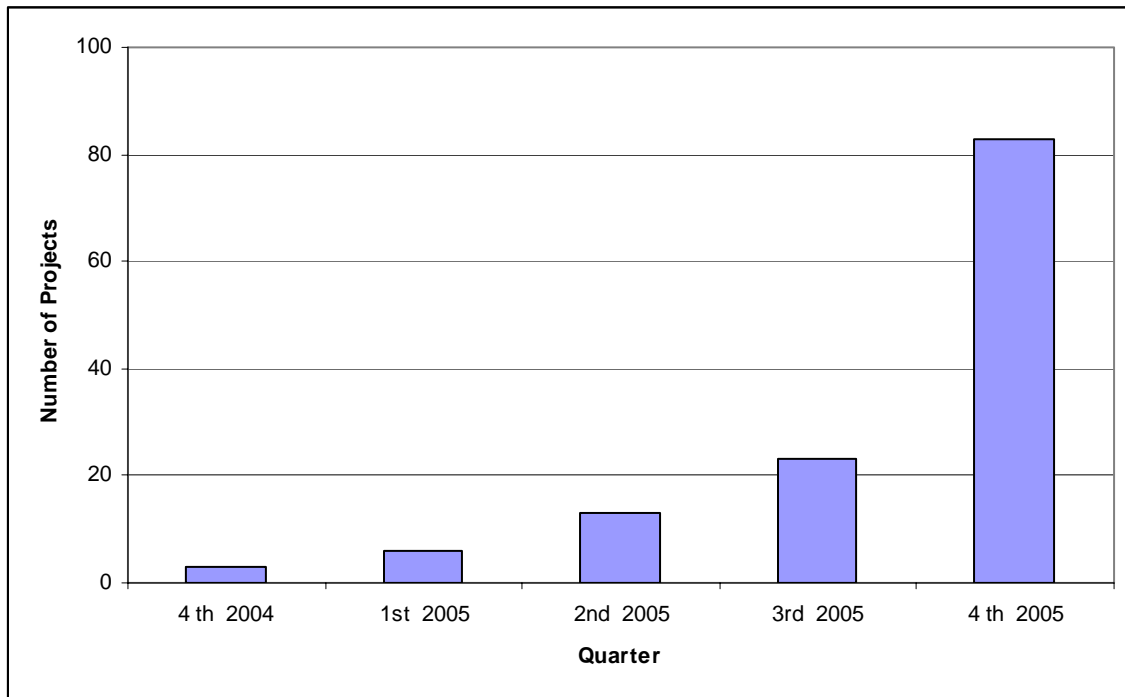


Figure 1: Number of registered CDM projects (counted by date of request for registration) based on: UNEP/RISO (2006)