

Transboundary Air Pollution: Climate Change and the Policy of Joint Implementation

by Anne Johanne Enger

Session II

ENVIRONMENTAL MANAGEMENT, CLIMATE CHANGE, AND INDUSTRIAL ENERGY EFFICIENCY

Transboundary Air Pollution:
Climate Change and the Policy
of Joint Implementation



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna, 2000

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Executive summary

The danger of major climate change caused by human activity is perhaps the most serious threat the world has ever faced.

After the Parties signed the Kyoto Protocol, countries are no longer free to allow unlimited emissions of greenhouse gases. For the first time, specific commitments to limit emissions have been formulated, and in future there will be costs associated with the generation of emissions. All industrial countries will therefore have to alter their production and consumption patterns. We must make a critical examination of energy use, materials use, production processes, waste management and transport.

During the past 150 years, labour efficiency has risen by a factor of 20. We now need a similar development in how efficiently we use resources. This is particularly important as a means of giving the poorest countries an opportunity to strengthen their economies while not exceeding the carrying capacity of nature. If we are to succeed in this task at the national level as well, all sectors of society must be willing to take a share of the responsibility; and we must all use our creativity and expertise in a concerted effort to bring about change.

The industrialized countries under the Convention are trying to return their greenhouse gas emissions to 1990 levels by the year 2012. They have also accepted emission targets for the period 2008-2012. Use of the so-called "flexible mechanisms" is crucial for a successful implementation of the Kyoto Protocol. Conference of the Parties (COP 1) in Berlin decided to start the work on Joint Implementation (JI) with a Pilot Phase until the year 2000. This Pilot Phase is meant to gather experiences with projects concerning climate reductions from all interested countries. Projects within this period are known as Activities Implemented Jointly (AIJ). The aim is to get experience with the principle of cost minimization and emission reductions in identified projects.

When summarizing the experiences the Parties have had regarding use of the flexible mechanisms so far, the following aspects should be highlighted:

- ❑ There seem to be a large, as yet untapped source of climate relevant projects, which could be implemented as cooperative projects between Parties to the Climate Convention and eventually the Kyoto Protocol.
- ❑ For many of these projects, it seems possible to combine an interest to invest in additional climate gas emission reductions or sequestration effects with meeting local and national environmental and developmental objectives. Thus, the potential for mutually beneficial activities through equal partnerships seems considerable.
- ❑ Joint implementation seems to be a flexible instrument, adaptable not only to both industrialized countries and particular circumstances of developing regions, but also of relevance for a variety of important sectors.
- ❑ The potential role of climate motivated project cooperation between the Parties to the Convention and the Kyoto Protocol in technology cooperation and dissemination seems substantial.

- For these potentials to be realized on a larger scale, it is necessary to give attention to important factors such as control and verification of emissions reductions. Fortunately a number of relevant methodologies already exist which can be applied in order to control and verify project benefits.

There is also a need to strengthen the incentives for engaging in these activities, especially for the private sector and to review the potential for this as a result of the Kyoto Protocol. Further, there is a need to pursue measures to lower the transaction costs, which tend to be high in some cases. In this regard, it should be noted that the transaction costs are likely to be reduced as a result of experience gained and as a result of a larger project portfolio.

International organizations such as UNIDO can play an active and important role towards the industry among its member States. This involves awareness of the problem and potential solutions, training and dialogue with governmental and industrial decision-makers.

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1 Introduction

1.1 The climate challenge

The danger of major climate change caused by human activity is perhaps the most serious threat the world has ever faced. According to the Second Assessment Report of the United Nations Intergovernmental Panel on Climate Change (IPCC), published in 1995, the global mean temperature is projected to rise by between 1° – 3.5°C during the next 100 years. This would be the most rapid rise in the mean temperature for the last 10,000 years, and would result in the highest global mean temperature for 150,000 years. A temperature rise of this magnitude would result in a rise in sea level and changes in precipitation patterns and wind systems, which might have major effects on natural ecosystems and on socio-economic conditions.

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted in May 1992 in Rio de Janeiro, and provided an essential foundation for further international efforts to counteract climate change. It entered into force in 1994, and the following year the “Berlin Mandate” was adopted as terms of reference for further negotiations to strengthen and elaborate the commitments of industrial countries, i.e. the Organisation for Cooperation and Development (OECD) countries and countries undergoing the process of transition to a market economy. As a result of the negotiation process, a Protocol under the Climate Convention was adopted in Kyoto on 11 December 1997.

2 The Kyoto Protocol

The adoption of the Kyoto Protocol was a historic step forward in a global context. It is a legally binding agreement that elaborates and quantifies the commitments of industrial countries under the Climate Convention.

Although the Kyoto Protocol represents an important step forward for international climate policy, it is not in itself an ambitious enough response to the challenges the world is facing as regard climate change. It will be necessary for the industrial countries to make greater reductions in emissions, and for the developing countries, for which the Protocol does not currently contain commitments to limit emissions, to undertake such commitments.

Nevertheless, the Protocol includes more than could have been expected before the Kyoto conference. It also sets out innovative principles that will provide an important basis for further negotiations. Talks on commitments for the period after 2012 will begin by 2005.

2.1 The main elements of the Kyoto Protocol

- ❑ A commitment by the industrial countries to reduce their aggregate emissions of greenhouse gases by at least 5 per cent below 1990 levels between 2008 and 2012.
- ❑ Commitments to reduce overall emissions of the six most important greenhouse gases: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). Net changes in removals of greenhouse gases by sinks resulting from direct human-induced measures since 1990 may be used in calculating national emission levels.
- ❑ Differentiation of the quantitative commitments undertaken by industrial countries. Opportunities for Parties to fulfil their commitments jointly (known as the “bubble” proposal).
- ❑ Opportunities for joint implementation projects between developed countries. Opportunities for emissions trading between industrial countries.
- ❑ The establishment of a clean development mechanism, providing opportunities for industrial countries to finance projects to reduce emissions in developing countries and be credited with emission reductions for such projects in their own emission inventories.
- ❑ Use of flexible implementation mechanisms (joint implementation projects between industrial countries, emissions trading and the clean development mechanism) shall be a supplement to national measures.
- ❑ Each industrial country shall have made demonstrable progress in achieving its commitments by 2005.

2.2 Flexible mechanisms

Joint implementation

Like most of the flexibility mechanisms, there are more unresolved than resolved issues. First of all, the Protocol states that joint implementation (JI) projects must be “supplemental” to any domestic activities to reduce emissions. Nevertheless, “supplemental” is not defined and parties disagree on the correct usage. Given that “supplemental” is not even mentioned in the article on the clean development mechanism, it is unlikely that Annex I countries will be forced to achieve a high percentage of emission reductions domestically. Another contentious issue involves the requirement that the emission reductions be “additional” to what would otherwise occur. Once again, there are many interpretations of “additional.” Some have defined “additional” using a financial test that considers whether funding for the project would have been available if it were not for JI. This test will probably be combined with a scientific test to quantify the additional reductions in greenhouse gas (GHG) emissions from the project.

A baseline on emissions must be established in order to measure net reductions in GHG emissions. The two methods for determining a baseline that have been most widely discussed is a top-down and project-by-project approach. Because JI projects are between Annex I parties, a project-by-project baseline may be unnecessary as emissions will be monitored at the national level in order to ensure compliance. Therefore, a top-down approach to baseline setting may be the most efficient. In a top-down approach the government would set the baseline and ensure industry compliance. Governments will be motivated to set accurate baselines because they will not want to risk over-selling emission credits and a breach of the Protocol. The obvious advantages of using a top-down baseline system are that costs of regulation are minimized and project implementation would be streamlined.

In discussions among Parties to the Kyoto Protocol, the view has often been expressed that the Executive Board should be “lean” and restrict itself to executive decisions. In order to implement the project-related Kyoto Mechanisms such as clean development mechanism (CDM) and JI, therefore, the Executive Board of the CDM would operate through other bodies to perform these technical functions. One of the options that exist for the future is that an international organization (such as UNIDO) could be given certain responsibilities related to the preparation of project dossiers. Similarly, the neutral nature of an international, multilateral organization like UNIDO could lead to it being considered suitable as a source of impartial expert advice on topics such as the establishment of baselines for industry-related projects, determination of additionality, calculation of emissions reductions, etc.

Clean development mechanism

To help the developing countries in achieving sustainable development, a CDM was defined in the Kyoto Protocol. The CDM as described in Article 12 of the Kyoto Protocol was the surprising result of the Kyoto Conference. The implications for the (AIJ) to the establishment of CDM have yet to be evaluated by the Parties to the Climate Convention. However, it seems reasonable to assume that since a different mechanism has been established, and there is no reference to AIJ in the Protocol, focus will increasingly be shifted towards CDM.

Although CDM is a different mechanism from AIJ, it is important to use the lessons learned from the AIJ Pilot Phase in the CDM context. The most relevant experiences are probably at the project level, relating to such issues as baseline calculations, monitoring and verification of emissions reductions at the project level, limiting transaction costs, formulation of project agreements, etc. In our experience, and particularly with a view to the expected involvement of the private sector in CDM activities, it would seem important that the CDM becomes efficient, unbureaucratic, flexible and as workable as possible. Nevertheless we have to bear in mind the need to maintain the necessary control. An efficient system must also keep the necessary oversight regarding the emissions reductions achieved through this mechanism.

COP 4 in Buenos Aires brought the discussion on CDM further. A decision including a work programme where CDM is given priority was made. We hope the Parties to the Climate Convention will ensure that the experiences from the AIJ Pilot Phase are evaluated and made available to the parties before the end of the Pilot Phase, hopefully before year 2000.

International trading system

Emissions Trading allows an Annex I country with an excess of emission units, presumably from reducing emissions below commitment levels, to sell its credits to another Annex I country unable to meet its commitments. Trading is probably the most contentious of all the flexibility mechanisms mentioned in the Protocol. The actual principles, rules and guidelines for trading are to be decided at an undetermined Conference of the Parties (COP) 6 in Haag in November 2000.

Activities implemented jointly under the pilot phase

The first Conference of the Parties (COP 1) was held in Berlin in the spring of 1995. This first session resulted in the establishment of the Ad hoc Group on the Berlin Mandate (AGBM). Their mandate was to complete the work on a protocol or a legal instrument to the COP at its third session (COP 3). Since then work has been in progress. The result of these negotiations was the decision about a protocol in Kyoto in December 1997. AGBM fulfilled its mandate in Kyoto when the protocol was completed.

Already during the negotiations of the Climate Convention (FCCC) in 1991-1992, Norway introduced what came to be later known as Joint Implementation (JI). The idea was to open for common action by letting countries strive to implement an emission reduction in the most cost-efficient way. The Climate Convention contains decisions that make JI possible. Since the Climate Convention was signed in 1992, Norway has worked actively to achieve a broad acceptance for JI through the financing of projects for demonstration in different countries.

COP 1 in Berlin decided to start the work on JI with a Pilot Phase until the year 2000. This Pilot Phase is meant to gather experiences with projects concerning climate reductions from all interested countries. Projects within this period are known as Activities Implemented Jointly (AIJ). The aim is to get experience with the principle of cost minimization and emission reductions in identified projects.

Norway took the initiative for the first pilot projects to gain practical experience with JI of climate action in 1993. Through the World Bank and in collaboration with

Poland and Mexico two projects were established. After COP1 established a formal Pilot Phase for joint implementation in 1995, the Norwegian work has been developed and expanded.

The countries included in the Climate Convention cover Annex countries within the OECD and the Economies in Transition in Eastern Europe. These countries have pledged themselves to reducing their greenhouse gas emissions within the commitment period (2008-2012). The developing countries not included in Annex 1 have no current commitments in the Kyoto Protocol.

The fifth Conference of the Parties (COP 5) that was held in Bonn in October/November 1999 took a step further regarding AIJ. The Parties decided to continue the Pilot Phase until a final decision is taken at COP 6.

Reports for all projects are made accessible through UNFCCC. In this way the viewpoints and the projects experience of both countries are presented.

The principal aim of the AIJ-programme is to maximize learning by gaining practical experience with AIJ and to explore long-term strategies for the mechanism of JI. Before the end of the Pilot Phase it is important to review this process. In order to be prepared for an operational phase of JI. Several countries have already started to identify AIJ-projects that can be credited as JI in the compliance period.

Involvement in work to develop the United Nations' Framework Convention on Climate Change (UNFCCC) with cost effective mechanisms for the mutual benefit of all Parties is a key element of the Norwegian climate policy. Cooperative efforts under mutually beneficial incentive structures may provide promising opportunities for reinforcing environment and development objectives. Specifically, the report on climate policy to the Parliament in 1995 concludes that Activities Implemented Jointly (AIJ) will be given priority as an important supplement to measures implemented domestically. To this end, a Governmental Climate Change Fund, established in 1991 and since then replenished on an annual basis, includes provisions for funding AIJ pilot projects and related methodological work. This fund is established separate from, and in addition, to the development assistance accounts.

The overriding objective for all Pilot Phase activities is to contribute to the assessment of the possible global benefits and national economic, social and environmental impacts associated with Activities Implemented Jointly. The Norwegian programme, constituting workshops with interested host countries and pilot projects on a bilateral and multilateral basis, aims to catalyse opportunities for broad participation among interested Parties and relevant actors with the view to maximizing learning value. In addition to the Governmental fund, private sector involvement in pilot projects may provide further financial and technological resources and practical experience and potentially enlarge the leverage effect of the mechanism of AIJ.

3

The role of a donor country

3.1 Possibilities for implementing the Kyoto Protocol

Like several other European countries, the Norwegian emissions of greenhouse gases are increasing. Norwegian greenhouse gas emissions (excluding sequestration of CO₂ in forests) are expected to increase from about 55 million tons CO₂ equivalents in 1990 to about 68 million tons CO₂ equivalents in 2010 if no new measures are introduced. The choice of policy instruments to meet the commitment under the Kyoto Protocol must be made on the basis of several considerations. Firstly, the polluter pays principal is important. The instruments chosen must also be efficient, so that one is reasonably certain that a country will meet its international commitments. Furthermore, these commitments must be met by cost-effective use of policy instruments across sectors, gases and countries, and by applying a strategy that includes both measures to reduce emissions and measures to enhance sinks of greenhouse gases. Various other considerations must also be taken into account.

Until now, the different countries use of policy instruments to limit greenhouse gas emissions has been planned for a situation without any legally binding commitments to reduce emissions. This has changed with the adoption of the Kyoto Protocol. Policy instruments must now be chosen and their application adjusted to reflect environmental costs and to ensure that commitments under the Kyoto Protocol and the Government's climate policy goals are achieved. This will be the same for all Parties under the Protocol.

Several countries are about to introduce instruments that will act as an incentive to carry out the least costly national measures to combat climate change. In the longer term, up to the end of the first commitment period (which runs from 2008 to 2012), the scope of policy instruments must be gradually expanded.

Experience in the application of the policy instruments that are to be introduced now, including the use of flexible implementation mechanisms and experience gained by other countries, will be used as a basis for evaluating the most appropriate instruments for long-term climate policy. The evaluation will include analyses of the advantages and disadvantages of a domestic system of emissions trading for greenhouse gases.

Up to 2012, a minimum goal must be to meet its commitment under the Kyoto Protocol. In the long term, the introduction of new technology may reduce the costs of reducing greenhouse gas emissions from certain activities. However, any investments made now that are sound in both socio-economic and environmental terms should have an effect on emissions by 2012. Policy instruments must be designed and phased in so that our commitment under the Kyoto Protocol is met at the lowest possible cost, and so that they also act as an incentive towards the more long-term structural changes that will be necessary to meet new, stronger commitments for periods after 2012.

3.2 Criteria for AIJ/JI-projects

The UNFCCC decided to make a framework for the ongoing Pilot Phase. Among the central criteria laid down in the Berlin Mandate are:

- All activities implemented jointly under the pilot phase require prior acceptance approval or endorsement by the governments of the Parties participating in these activities.
- Activities implemented jointly should bring about real, measurable and long-term environmental benefits to the mitigation of climate change, that would not have occurred in the absence of such activities, and contribute to cost effectiveness in achieving global benefits.
- AIJ-projects should be compatible and supportive of the national environmental and development priorities and strategies of the host country.
- The financing of AIJ-projects shall be additional to the financial obligations of Annex I Parties and to current official development assistance flows (ODA).

As a supplement to the criteria's given by the Convention, Norway has developed further premises when projects are evaluated:

- The possibility of environmental measurement
- The value as a demonstration project
- The possibility of successful implementation
- The risk of the project

The priority has been given to projects related to fuel switch, energy efficiency, and renewable energy and to lesser degree biotic sinks. This is among other a result of the criteria's presented above. Another result is cooperation with institutions like the World Bank.

All activities are carried out in close cooperation with the WB. According to the COP 1 Berlin decision, no credits will be earned during the Pilot Phase. Funding and resulting emission reductions shall be additional to business as usual scenarios and activities shall be voluntary and endorsed by the governments involved. An AIJ project must be compatible with national development priorities.

Two important objectives of the programme are the promotion of client country development, and the promotion of partnerships and private sector participation. The Norwegian financing of AIJ Pilot Projects has come mostly from the Government and to a lesser extent from the private sector. During this period, the agreement has placed increased weight on participation from the private sector. It is expected that private sector participation will increase when the Pilot Phase is closed and the Parties agree to open up for an early crediting.

Two pilot projects from 1993 are the base for the WB-collaboration. One of these involved financial support to fuelswitch from coal to gas-fired boilers in Poland. The objectives of the project as a whole was to stimulate technological and institutional changes to demonstrate inter-fuel substitution and energy efficiency improvement as means to support the country objectives. The total project aimed at encouraging and introducing more rapid transition from coal to gas and introducing more energy efficiency in residential buildings.

The project has the following components: One was a coal to gas conversion component, involving investments in about 30 non-industrial small to medium size

heat plants (boilers) for their conversion from coal to natural gas. The project is for residential houses and public buildings. The second was an energy efficiency component, involving investments in insulation of buildings and the installation of energy efficient equipment in some hundred new residential units. The technical assistance component included training in project management, environmental monitoring and nationwide marketing.

3.3 Bilateral agreements

Norway is also involved in several bilateral activities. As already mentioned, the identification and evaluation is being done by the NPCA on behalf of the Ministry of Environment in Eastern Europe. The Ministry of Foreign Affairs bears the main responsibility for bilateral projects in developing countries. A short overview of different bilateral projects follows:

Slovakia

Norway has also signed an agreement with Slovakia on a fuel-switching project at two smaller sites in Slovakia. By converting fuel from coal to biomass in several small heaters, the aim is to reduce the emissions and waste from the forest industry at the same time. Biomass boilers were installed in autumn 1998 and spring 1999.

In both sites there will be a fuel switch from fossil fuel to new energy efficient boilers for biomass. One of the existing boilers will be kept for security reasons at both sites.

The AIJ project concerns converting the boilers from coke to biomass (see figure). The figure shows the suggested baseline in bolded line and the AIJ alternative in the stippled line. In the suggested baseline scenario, Jochy will convert 100 per cent to natural gas in the year 2008. The CO₂ emissions associated with continued coke use during the next 10 years and then 100 per cent conversion to natural gas are calculated to be 20,030 tons. In the most realistic case, the calculated CO₂ emission reduction is approx 19,000 tons of CO₂ during the 30-year lifetime.

Romania

In Romania an agreement was signed 3 March 2000. The project consists of improving the efficiency of the district heating distribution system in the town of Fagaras. The AIJ-element will be among several measures to replace pipes.

The central district heating system in Fagaras serves approx. 29,000 inhabitants currently of a total number equal to 50,000 inhabitants. R.A. Servicii Comunale (RASC) Fagaras, also called Fagaras Regie, is a municipal company that supplies the heating, hot water and sewage services to the inhabitants in Fagaras City.

Heat, in the present heating system, is generated in the heating stations at Nitramonia, a chemical industry located outside Fagaras, and in a heating station in the city. The hot water is transported partly over a long distance through poorly

insulated pipelines. The existing thermal stations and distribution system suffer from lack of maintenance and the efficiency is very low. Because of this very inefficient and uncertain delivery, the municipal authorities wish to have their own more energy-efficient and reliable system.

A part of this system, serving 17,000 people will be rehabilitated with a loan from the European Bank for Reconstruction and Development (EBRD). The rehabilitation will consist of new heating centrals and pipelines, replacing the old ones. This is expected to reduce fuel consumption about 50 per cent due to the increased efficiency. For the remaining 12,000 inhabitants there is no possibility for a similar technical improvement due to credit restrictions until the EBRD credit is repaid.

The AIJ alternative will result in reduction of CO₂ emissions equal to 29,290 tons in the first year of the project period. This is due to increased system efficiency and fuel savings. During the project period of 15 years, the AIJ-project will result in accumulated emission reductions of 489,146 tons of CO₂. During the potential credit period under the UN FCCC AIJ Pilot Phase from 2008-2012, the AIJ-project will result in accumulated CO₂ emission reductions of 170,223 tons.

Russian Federation

In September 1997 Norway signed an agreement with the Netherlands about cooperation on a joint implementation project in the Russian Federation. Different AIJ projects are now considered as interesting when one project is chosen.

In St. Petersburg we have identified one interesting project. The Leningrad Mast factory produce impregnated wood products such as railway sleepers, telephone masts etc. The factory is situated a few kilometres outside of St. Petersburg. The heating demand is covered by the factory's boiler house. The fuel is heavy oil. The yearly consumption of oil is 7,200 tons, which represent an emission of 21,000 tons of CO₂ per year.

The factory has a huge amount of wood waste from its production. The wood waste is today dumped in local landfills. The landfills represent an environmental problem locally and globally. Wood waste from the production which is utilized as a fuel will neither give local water pollution nor contribute to global warming by emitting CH₄ to the atmosphere.

The project implies converting the existing heat supply based on heavy oil to local biomass fuel. It is recommended to install two biomass fired boilers, each with a capacity of 4 MW. The annual reduction of CO₂ is 16,400 tons. The annual reduction of biomass put on landfill correspond to CH₄-emissions of 31,900 CO₂ equivalents per year.

The total GHG reduction of the project, which includes reduction of CO₂ caused by reduced combustion of oil, and reduction of CH₄ because of reduced amounts biomass put on landfill, is 48,300 tons of CO₂ equivalents per year. During the project lifetime (15 years) the accumulated CO₂ reduction is 246,000 tons, and the total accumulated GHG reduction is 725,000 tons CO₂ equivalents.

4

Baseline and additionality

All projects are evaluated to satisfy the central AIJ criteria. One of the main challenges is to develop projects that will be supplemental to other activities. This is referred to as additionality. There are two types of additionality to be considered.

4.1 Financial additionality

Financing AIJ projects can only be additional to financial obligations for Annex II countries under the Convention to help with technology transfer. AIJ projects must also be separate from current official development assistance (ODA).

When a donor country evaluates financial additionality one important challenge is to overcome institutional barriers in the host country. Even if a project is very cheap and interesting for a private investor and therefore not additional, different barriers might prevent potentially good projects from being implemented. Lack of incentives in the host country to implement a project is often a result of little financial resources at the right level. Financial additionality has to evaluate potential barriers.

4.2 Environmental additionality

To bring about emission reductions, that would not have happened without the project, you need to have a sound starting point, or baseline, and an agreement on what a business-as-usual-scenario would have been.

The construction of the hypothetical state, that would have occurred without the project, is known as the “baseline” of the project. In an early state of the project the baseline will be an estimate connected with uncertainties.

To be able to develop a baseline, an identification of the driving force in a country is necessary. What will the possible CO₂ emissions be without the project? Does the country have plans to take action in the near future? Or, are there financial investors interested in this project? These questions are important to answer in order to estimate the additionality of a project. If a project is interesting for private investors, it will be implemented independent of AIJ-resources. The additionality is one important criteria.

Among several different baselines, one will be recommended as the most realistic. To generate new projects that give us information about additionality, we have sought to cooperate with interested and well-experienced partners.

Among the possible role that an international multilateral organization such as UNIDO could play in this regard would be to “promote” and broker industrial CDM

projects that reduce emissions of GHGs on behalf of the country (i.e. the economy in transition or developing country). An alternative possible option in this respect would be the development of a portfolio of industrial CDM projects, and securing their certification on behalf of the investor. Such activities would be very similar to what an organization such as UNIDO already carries out on a regular basis. Such a role would, however, contrast with the one discussed in section 2.2 above, since the activities just described would be a case where one of the two partners sought assistance in project implementation.

4.3 Project and baseline in Slovakia

As an example of how to develop a baseline, we have picked out one of our AIJ projects in Slovakia. The project consists of a fuel switch from fossil fuel to new energy efficient boilers for biomass in a wood-processing mill in the town of Quercus.

Three different baselines were developed:

1. Continued use of gas of the next 30 years.
2. Fuel switch to natural gas in 2008.
3. Fuel switch to natural gas in 2001.

The first scenario assumes that the mill will continue to use natural gas in the next 30 years to come. However, the wood-mill has its own biomass resources, and will be ready to use this for energy purposes as soon as their financial situation allows them to invest in biomass boilers.

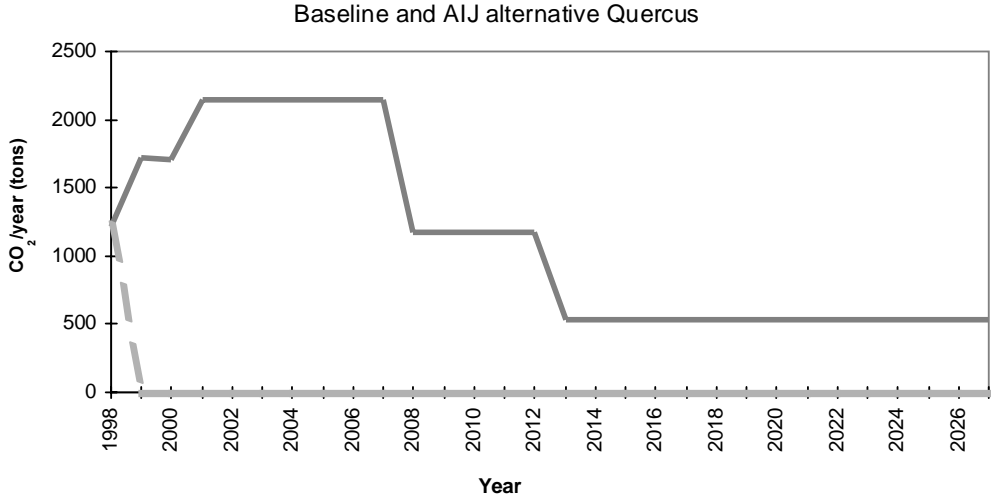
The second baseline scenario assumes that the first biomass boiler will be installed in the year 2008. A second boiler will follow in the year 2012 and these two boilers together will then cover 75-80 per cent of the energy requirement.

The third baseline scenario assumes that the investment budget will allow them to convert 90 per cent of the energy used in biomass already by 2001.

Slovakian natural gas prices are heavily subsidized and therefore quite competitive to the cost of boiler conversion. However, there are indications that the Government will seek to increase gas prices in the coming years at which time it may become cost-effective to replace the boilers with biomass-fired units.

The CO₂ emissions associated with the second baseline scenario are continued natural gas until 2008, then 45 per cent conversion to biomass and finally another 30 per cent conversion to biomass in 2012. Together with the AIJ alternative, the most realistic baseline is showed in the figure. In the suggested case the calculated CO₂ emission reduction is approx. 33,000 tons of CO₂ during the 30-year lifetime.

Suggested baseline and AIJ alternative



Determination of the emission reductions associated with the boiler conversion is sensitive to the selection of the baseline and AIJ alternatives. There is a degree of uncertainty regarding the possible baseline and AIJ alternatives.

5

The role of international institutions

5.1 EU's Fifth Framework Programme JOINT–Joint implementation between EU and Central European Electricity/CHP Companies

While considerable work has been done under the UNFCCC little direct progress has yet been made on JI in Europe. There are many reasons for this lack of activity. Most of this inactivity stems from lack of clear understanding of the mechanisms, modalities, framework, procedures, checks and balances required to:

- Identify qualified projects and partners
- Define finance requirements and identify sources of finance for JI projects
- Define the scope for JI under the UNFCCC for such projects
- Identify the best screening criteria and means for measuring the expected GHG mitigation under the proposed projects (including workable baselines) and
- Put in place the monitoring, verifying and evaluation mechanisms to ensure credible reductions within the JI framework.

Most companies have little awareness of the scope and potential for JI as a means to help them meet climate change targets. Most are concerned that the bureaucratic and reporting requirements under JI could raise the marginal costs of investing in projects in the CEEC to a level that exceeds the marginal costs of abatement or reduction in their own companies or other companies at home. Most are also confused by the proliferation of jargon, the lack of identifiable on-the-ground progress, the lack of clear “road signs” and guidelines and the lack of clarity on the way forward for JI.

The Norwegian Pollution Control Authority participates in a consortium headed by the European Commission's Fifth Framework Programme, JOINT. JOINT is a consortium of private companies, government representatives, energy and environment specialists and financial specialists to explore options and opportunities under JI. The companies in this consortium believe that the way forward for JI is to actually participate in defining the issues, setting up working relationships with governments, helping prepare the framework for identifying, clearing, approving and crediting investments through JI. They see that the way forward is in actually piloting activities, identifying partners and partner projects, defining requirements and sources and putting in place necessary framework or JI.

The JOINT consortium hope to provide guidance and experience that will be useful to other European companies and governments to make JI a reality under the Kyoto Framework.

5.2 What role can UNIDO play?

UNIDO's vision is to improve the living conditions of people and help industrial development of developing countries and countries with economies in transition. With the Kyoto Protocol, where both economies in transition, industrialized countries and developing countries are involved, UNIDO can play an important role. The challenge is to identify the role of UNIDO with regard to the implementation of the protocol. This includes fields such as industrial energy efficiency, cogeneration and climate change mitigation in industry.

There is a need for an organization like UNIDO in this respect. This concerns, especially, the development of energy efficiency programmes. The aim would be greater energy security, while addressing broader national, regional and global concerns, including greenhouse gas emissions. UNIDO's skill and know-how can assist governments in designing a framework that will address the needs of energy intensive industry. Such frameworks can be designed to exploit the energy conservation potential of various technological options, while taking full account of a country's current and evolving economic position and likely needs.

To foster these changes in thinking and industrial practice, UNIDO is a good supporter to the implementation of the Kyoto Protocol in strengthening local capacities by offering several principal services.

Raising awareness

This can be done through seminars, conferences and workshops; through media campaigns and demonstration projects; and through dialogue.

Dialogue

A good dialogue with governmental and industrial decision makers, industrial associations and other representative bodies. The message is targeted at leaders and opinion formers in government departments, local authorities, industry and trade associations, financial institutions, individual enterprises, universities and colleges, community groups, consumer representatives and environmental associations. The purpose is to explain what cleaner production is, what benefits it can bring, and what roles people can play to encourage it.

Training

UNIDO offers training to all relevant and interested parties.

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Some lessons learned

When summarizing the experiences we had made so far, the following aspects should be highlighted:

- ❑ There seem to be a large, as yet untapped source of climate relevant projects, which could be implemented as cooperative projects between Parties to the Climate Convention and eventually the Kyoto Protocol.
- ❑ For many of these projects, it seems possible to combine an interest to invest in additional climate gas emission reductions or sequestration effects with meeting local and national environmental and developmental objectives. Thus, the potential for mutually beneficial activities through equal partnerships seems considerable.
- ❑ AIJ also seems to be a flexible instrument, adaptable not only to both industrialized countries, and in particular circumstances all developing regions, but also of relevance for a variety of important sectors.
- ❑ The potential role of climate motivated project cooperation between the parties to the Convention and the Kyoto Protocol in technology cooperation and dissemination seems substantial.
- ❑ For these potentials to be realized on a larger scale, it is necessary to give attention to important factors such as control and verification of emissions reductions. Fortunately a number of relevant methodologies already exist which can be applied in order to control and verify project benefits.
- ❑ There is also a need to strengthen the incentives for engaging in these activities, especially for the private sector and to review the potential for this as a result of the Kyoto Protocol. Further, there is a need to pursue measures to lower the transaction costs, which tend to be high in some cases. In this regard, it should be noted that the transaction costs are likely to be reduced as a result of experience gained and as a result of a larger project portfolio.

