EEA and Norway Grants

Review of support to Greenhouse Gas Reductions

Final Report

March 2010



This report presents the views of the Review Team, which does not necessarily coincide with those of the EEA and Norway Grants



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Abbreviations

DAR	Detailed Appraisal Report
EEA	European Economic Area
EEB	Energy Efficiency in Buildings
EEI	Energy Efficiency in Industry
EFTA	European Free Trade Association
ERDF	European Regional Development Fund
EU	European Union
FMC	Financial Mechanism Committee
FMO	Financial Mechanism Office
GJ	Giga Joule
HS	Heating Systems
kWh	kilo Watt hours
GDD	Grant Decision Document
IN	Innovation Norway
NFP	National Focal Point
NGO	Non Governmental Organisations
PIP	Project Implementation Plan
PIR	Project Implementation Report
RES	Renewable Energy Source

1 Executive summary

The Review

This review has been undertaken by a team from COWI A/S in the period from August to December 2009. The team has recorded information on the EEA and Norway Grants portfolio of projects that have contributed to the reduction of greenhouse gasses in the first 5-year period of the programme's operation from 2004 - 2009. The portfolio included in the review comprises 164 projects in 13 countries with a total grant amount of 114.6 million EUR.

The information used by the review team is project documentation provided by the Financial Management Office's administration and monitoring system, questionnaires to all project promoters, site visits and participation in the workshop 'Lesson Learned and looking forward EEA and Norway Grants in the environmental sector' in October 2009.

The findings and conclusions

The review comprises 152 infrastructure projects and 12 soft projects. Poland has been the largest single beneficiary with almost 60% of the project portfolio. The infrastructure projects cover seven different types of intervention of which energy efficiency in buildings covers 30% of the project portfolio.

At the time of the evaluation 22% of the projects were completed.

The total amount of CO_2 emission reductions by country depends on the scale, type and number of interventions in each country. Due to the large number, the total amount of CO_2 emission reductions in Poland is large, but this total amount is oversized by one single project in Estonia. The Polish projects are typically thermal renovation of public buildings while the Estonian project is a large industrial project (cement factory) replacing highly polluting oil shale by waste combined with the introduction of new technology.

The cost efficiency of the interventions expressed as investment cost per reduced ton of CO_2 is 29 EUR in average for the programme, including the above mentioned large Estonian project with very low cost per saved ton CO_2 . Excluding the low cost of the Estonian project, the average cost per reduced ton of CO_2 increases to 42 EUR.

Costs efficiency is calculated for each of the intervention types: energy efficiency in buildings, changes of heating system, renewable energy and a number of combinations i.e. energy efficiency combined with changes of heating system. The calculations show that changes of heating systems have the lowest CO_2 reduction cost of 25 EUR/t CO_2 . Renewable energy reduction cost is 36 EUR/t CO_2 while the CO_2 reduction cost for energy efficiency in buildings is 49 EUR/t CO_2 . The relatively high cost for energy efficiency in buildings compared to changes of heating systems or renewable energy reflects that energy efficiency in buildings is a more complex and comprehensive intervention.

The effectiveness of the interventions, expressed as *percentage reductions of* CO_2 emissions compared to the baseline (business as usual), shows a high effectiveness of 56% reductions for energy efficiency in buildings and an even higher effectiveness when this intervention is combined with a change in the heating system. Other intervention types are only represented with a minor number of projects, but it seems that effectiveness is lower for interventions like changes in heating system when this intervention is not combined with an energy efficiency intervention. The effectiveness, expressed as *percentage reductions of energy consumption* compared to the baseline, also shows a high effectiveness of 57% reductions for energy efficiency in buildings.

The EEA and Norway Grants projects have been compared to interventions (reference projects) undertaken by other support schemes. The average reduction cost for the reference projects is 35 EUR/ton CO_2 which is above the 29 EUR/ton CO_2 average reduction cost for EEA and Norway Grants projects with the Estonian project. The average costs per saved CO_2 must be regarded as a very acceptable result, especially taking into consideration that the EEA and Norway Grants does not have a specific target for cost per ton saved CO_2 emissions.

More than 50% of the EEA and Norway Grants projects received a grant share of 85%. Public investors will require at least 5% p.a. Internal Rate of Return on investment and private investors will require minimum 7.5% p.a., the majority of projects could be expected to have a return between 5% p.a. and 7.5% p.a. The review shows that almost 40% will have a return on their investment less than 5% p.a. and other 35% will have a return on their investment above 7.5% p.a. Around 25% will have a return on their investment between 5% p.a. and 7.5% p.a., which is expected to be acceptable and sufficient. This indicates that the programme would be more effective with grant share better targeted.

The environmental effects are related to the reduction in consumption of coal and other fossil fuels. The reductions of CO_2 emissions are well reported while the reductions in other pollutants like SO_2 , NO_x , particles and noise are only reported in qualitative terms. The social effects are primarily related to increased comfort in the public buildings that have been renovated supplemented by reductions in pollutants and noise. There are also reported positive health effects due to improved indoor climate and reduced emissions. The financial and economic effects reported are mostly reductions of energy expenditures for promoters and direct increase in employment during implementation. Only half of the EEA and Norway Grants projects have reported on job creation, but

scaled up to the total project portfolio the direct job effect will be 885, based on the project promoters own assessments. Alternatively the evaluation team has used from international studies of employment impacts of sustainable energy projects. These studies show a range of 10-15 jobs per million EUR invested in renewable energy and 8-10 jobs per million EUR invested in energy efficiency and using these figures the direct job effect could be up to 1750 jobs.

There are support schemes comprising similar interventions as the EEA and Norway Grants but the need for these types of interventions is huge and many promoters are reporting that the EEA and Norway Grants is filling a gap.

It has been difficult to compare the efficiency and effectiveness of infrastructure projects compared to soft projects as the types of intervention are very different. The soft projects comprise activities such as awareness raising with an impact that is difficult to quantify, at least in the short term, while the infrastructure project impacts can be measured. However, the survey has shown that soft projects and infrastructure projects can supplement each other in a most effective way.

There have been misunderstandings and errors in the project documentation, which calls for a revision of the formats and better explanations. Especially the whole setup with reductions related to baselines requires some explanation.

The Lesson Learnt and Recommendations

EEA and Norway Grants is a well-managed and well received programme that deserves major attention in the beneficiary countries during the next programme period starting in 2009. The first programme period suffered from a long lead time, and many projects only started late in the programme period. Most likely, the experience gained will increase effectiveness in future programme periods.

The EEA and Norway Grants programme is addressing several objectives of which CO_2 reductions is only one. The reduction costs therefore are relatively high compared to other CO_2 reduction interventions and offsets that are used as means to contribute to the donor states' commitments to greenhouse gas reductions. However, the programme has contributed to greenhouse gas emissions reductions, and the costs are not unreasonable compared to other projects and programmes.

The justification of the programme must, however, come from other characteristics of the supported projects than cost efficiency in mitigating greenhouse gas emissions. The EEA and Norway Grants strengths are their openness and their width and ability to combine several targets and interventions and address small communities and projects. These characteristics in combination with the high grant rates make the programmes attractive to beneficiaries. The experience from the first five years demonstrates that there is room for a broader programme like EEA and Norway Grants, and that the EEA and Norway Grants is a first choice for many of the project promoters in the target group. It is, however, recommended that the programme should maintain focus on energy efficiency in buildings and changes of heating systems in the public sector in the Central European countries when talking about interventions in the energy sector. The potential and needs are enormous in these sectors and resources scarce. Further, these sectors have a high priority on the national energy policy agendas.

In terms of the energy sector, it is recommended to concentrate efforts on the Central European countries, which is already happening to some extent.

It is considered a strength of the programme that the beneficiary countries are so closely involved in the priorities of the grant programme. This ensures strong alignment with national priorities in the national energy and climate change policy.

Regarding the eligibility criteria and grant level, we would recommend a closer assessment of the grant to each project in order to avoid the tendency towards overcompensation in approximately one third of the projects.

A more focused, simplified and well-tailored uniform way of documenting the expected and achieved sustainability effect in a future round of the programme could improve future reviews/evaluations of these aspects.

On the overall level, the need for support for greenhouse gas reduction projects is huge, and overlapping grant schemes would not result in any drainage problems. However, it makes sense to consider the national framework conditions and focus EEA programmes on few priority sectors where the need is evident and other funds are lacking or have a limited coverage. Several promoters have mentioned that thermal renovation of public buildings, including energy efficiency and change of heating system, is an area where EEA and Norway Grants are filling a gap. A more narrow and prioritised focus of EEA funds would also increase the potential for exchange of knowledge between the projects, development of benchmarks and tools to support optimal implementation of projects.

Administratively, we recommend simplifying the system. Disbursement of funds is closely linked to progress reports and presently the Focal Points monitor the projects closely with progress reports on a three-month basis. This could be extended to six-month or annual basis. The current management and monitoring system is very detailed to a level where the quality of data cannot follow suit unless an effort is made to train the Focal Points and in some cases also the project promoters. The main benefit from the current monitoring system is easy access to overall programme progress to the extent that the project data in the system are reliable.

During the selection phase, some mistakes in the Project Applications are detected by the external appraisal team, but further down the project cycle there is no external parties to correct misunderstandings. In the current system, there is especially a need to ensure that the concepts' baselines and targets are properly understood and recorded by the project promoters. In order to improve data consistency and coherence, it is recommended to use 'seed money' to support the development of the projects and ensure correct data.

2 Introduction and Background

The objective of the review is to increase the learning and reporting of the 'EEA and Norway Grants' and 'The Norwegian Cooperation Programmes for Economic Growth and Sustainable Development in Bulgaria and Romania'¹ support to the beneficiary states within the priority sectors.

The review assesses the performance and results of the interventions in the project portfolio, both learning and accountability aspects will be considered in the review.

An important objective is to analyse the impact and effectiveness in terms of CO_2 reductions and the cost of those for different project types, sectors and beneficiary countries. Another focus area is the programme and its results, impacts and interrelations to other comparable programmes. Finally, the review is to eliminate misinformation and mistaken data encountered in the project files.

The Consultant has reviewed 164 projects in total, 151 EEA and Norway Grants projects and 13 'The Norwegian Cooperation Programmes for Economic Growth and Sustainable Development in Bulgaria and Romania' projects.

2.1 Description of EEA and Norway Grants

The EEA and Norway Grants were established in 2004 by Iceland, Liechtenstein and Norway as a consequence of the enlargement of the European Union. Ten new member states joined the European Economic Area (EEA), which brought together Iceland, Liechtenstein, Norway and the EU in the Internal Market. In 2007, Bulgaria and Romania also joined and became beneficiaries of EEA and Norway Grants in addition to Greece, Portugal and Spain being beneficiaries since 2004.

The aim of the EEA and Norway Grants is to contribute to a more equal Europe by reducing social and economic disparities.

¹ Norway grants in Romania and Bulgaria

2.1.1 Innovation Norway

Innovation Norway is the fond operator for Norway Grants of ' The Norwegian Cooperation Programmes for Economic Growth and Sustainable Development in Bulgaria and Romania'.

2.1.2 Funding and beneficiary countries

During the period of 2004-2009, the three donor states, Iceland, Liechtenstein and Norway have made available 1.3 billion EUR of project funding to a wide range of beneficiaries such as organisations, NGOs, municipalities and businesses across Central and Southern Europe.

A total 672 million EUR has been channelled through the EEA and Norway Grants to the 15 beneficiary countries. Norway contributes with around 97% of the funding and makes available an additional 567 million EUR through the Norway Grants to the ten countries that joined the EU in 2004. Norway furthermore contributes with 68 million EUR in the bilateral cooperation programmes with Bulgaria and Romania.

At the end of the five year period from May 2004–April 2009, grants had been awarded to 1250 projects, programmes and funds in the 15 beneficiary countries with Poland as the biggest beneficiary with total funds of 558 million EUR opposite Malta having received the smallest amount of a total of 3.6 million EUR.

Beneficiary states	Gross amount EUR
Bulgaria	41,500,000
Czech Republic	110,910,000
Cyprus	4,662,000
Estonia	32,760,000
Greece	34,260,000
Latvia	53,760,000
Lithuania	67,257,000
Hungary	135,057,000
Malta	3,621,000
Poland	558,630,000
Portugal	31,320,000
Romania	98,500,000
Slovenia	18,594,000
Slovakia	70,329,000
Spain	45,840,000
Total	1,307,000,000

Table 2-1Distribution of grants per beneficiary country

Source: www.eeagrants.org

2.1.3 Programming Framework

Projects have been supported in a wide range of priority sectors: Research; Cultural heritage, Human resources; Health and childcare; Environment and sustainable development; Aquis communautaire; Schengen and the judiciary; Cross-border activities and Regional policy.

The donor countries have prioritised the **protection of the environment and promotion of sustainable development** as core areas of support from the EEA and Norway Grants, which has resulted in around one quarter of the total grants being channelled towards this priority sector.

The figure below illustrates the programming framework

Figure 2-1 Programming Framework



2.1.4 The priority area of reduction of greenhouse gases

Within this priority sector, the main area of support and the focus of this review concern reduction of greenhouse gases through energy efficiency and renewable energy measures.

The programme is further described in the following, where the overall objectives are presented. The programme approach considers energy saving as the quickest, most efficient and most cost-effective approach for reducing greenhouse gas emissions and improving air quality, in particular in densely populated areas.

The beneficiary countries are closely involved in the implementation of the programme and carry out the detailed programming of the funds within each priority sector. This results in national focus areas differing among the countries:

Country	National focus area of grants within the area of reduction of greenhouse gases
Bulgaria	- developing sustainable energy production, incl. renewable energy, geothermal energy, hydropower and energy efficiency waste
Cyprus	 reduction of CO₂ emissions management of selective solid waste and possible recycling, e.g. of electric and electronic equipment waste
Czech Republic	 environmental education on all levels of state administration promotion of using bio fuels and alternative energy resources as secondary source of energy at municipality level reduction of greenhouse gases in Czech Republic
Estonia	 reduction of greenhouse gases in Estonia development and implementation of waste assembling (collection) and recycling systems
	 promotion of energy efficiency, including energy auditing in buildings
Greece	 development of alternative sources of energy by using renew- able natural resources
Hungary	 promoting the involvement of NGOs in the field of environmental protection environmental awareness education promoting the use of renewable/alternative energy (e.g. geothermal energy and hydropower) promoting the introduction of clean production
	-promotion of sustainable economic growth
Latvia	- encouraging the use of renewable energy
Lithuania	The area of environment and reduction of greenhouse gases was not prioritized.
Malta	- promotion of renewable energy
Poland	 restrictions in usage of individual heating systems in favour of communal/municipal heating networks replacement of obsolete heating energy sources by modern, energy-saving and ecological ones thermal-insulation work in public utility buildings

Table 2-2National focus area of grants within the area of reduction of green-
house gases

	 investments in the field of use of renewable energy sources, such as small hydropower plants of up to 5 Mega Watts (MW), use of solar energy and of biomass in individual heating systems
	 -reduction of energy, raw material and water consumption of manufacturing and services activities through improvement of efficiency of productive resources use - use of alternative energy sources - activities for supporting forest management
Portugal	Sustainable forest development
Romania	 developing renewable energy sources, including geothermal energy and hydropower
Slovakia	- improvement of air quality and greenhouse gas reduction in Slovakia
	 -promotion of renewable energy sources - improvement of municipal street lighting for energy saving - reconstruction of heat distributions and central sources of heat operated by public enterprises for energy saving - promotion of the use of bio fuels and alternative energy resources as secondary sources of energy at municipality and regional level
Slovenia	 promotion of energy efficiency the regulation of greenhouse gases emissions
Spain	 reduced atmospheric and noise pollution renewable energy

Source: www.eeagrants.org

2.1.5 Organisation and application procedure

The EEA and Norway Grants are implemented in cooperation between the donor states and the beneficiary states, with the Financial Mechanism Office (FMO) in Brussels acting as the day-to-day secretariat and National Focal Points working as the coordinating authorities in each of the beneficiary countries.

The EEA and Norway Grants have joint management, but separate decisionmaking bodies. The Financial Mechanism Committee (FMC), consisting of representatives of the ministries of foreign affairs in the three donor states, is the decision-making body for the EEA Grants. The Norwegian Ministry of Foreign Affairs act as the decision-making body for the Norway Grants.

The projects in Romania and Bulgaria projects are administrated from Innovation Norway's office in Oslo in co-operation with the focal points.

The beneficiary states announce the availability of project support through open calls for proposals. A designated intermediary is responsible for the open calls for proposals, assess the proposals and award grants to end-recipients and operate the funds and programmes. The appointment of each intermediary is approved by Iceland, Liechtenstein and Norway. The prioritised applications from each open call are forwarded by the beneficiary state to the FMO for a detailed appraisal. In addition to delivering a grant recommendation on each application to the decision-making bodies, the FMO follows up on each project, programme and fund through its life-cycle. Furthermore, the EEA Enlargement Agreement establishes that the European Commission is responsible for verifying that project proposals are compatible with EU goals. Consequently, the Commission screens all project proposals.

The projects administrated by Innovation Norway projects differ in their structure from EEA and Norway Grants administrated projects, because they require mandatorily a Norwegian counterpart and through the fact that they provide so-called 'seed finance' of 25 000 EUR, based on project ideas notes, that the project promoters can use to develop the project.

3 Method and Scope of the Review

3.1 Objectives and scope of review

The aim of the review is to assess the projects of EEA and Norway Grants supported in the Member States within the area of greenhouse gas reduction carried out under the priority of protection of the environment and promotion of sustainable development.

The review included 164 projects having received grants from the EEA and Norway funds. The project portfolio comprises projects in 13 Member States; of these 142 are targeted renewable energy, energy efficiency and reduction of greenhouse gases, three the reduction of air-pollution sector, 12 waste management sector and seven other sectors.²

The total grant amount allocated to these 164 projects is 114.6 million EUR.

The overall objective of the review has been to increased knowledge about the results and outcome of the programme. It describes factors of general importance for the results of interventions financed by EEA and Norway Grants with the aim of using those as input for the preparation of new programmes.

Within this overall frame, the assessment has focused on issues related to cost efficiency and effectiveness, which have been further detailed in the following key issues/questions set up by the FMO in Terms of Reference to guide the work;

- Update and check of descriptive information and data of projects
- Cost-efficiency i.e. cost per reduced tonne of CO₂ and project returns
- Which of the measures supported are most effective in terms of greenhouse gas reductions?
- Comparison of EEA and Norway Grants projects with other greenhouse gas reduction measures taken in the beneficiary states – both in relation to cost-efficiency and overall impact.

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² The project portfolio is listed in Appendix 4

- Has it been necessary to support projects with short pay-back time in order to trigger measures? Is it possible to say something meaningful about the grant rate in such cases?
- Assessment of other sustainability effects related to the projects
- Are the funds provided by the EEA and Norway Grants additional or supplementary for the various types of projects supported?
- Assess effectiveness and impact of infrastructural versus "soft" projects in EEA and Norway Grants' project portfolio.
- Assessment of the quality of the baseline and target values.

The review is comprehensive in its scope covering all fifteen beneficiary states and projects carried out within these countries during the period of 2004-2009.

3.2 Methodological framework

The review is carried out as a kind of interim evaluation as it is conducted during the implementation of the programme. The review is forward looking examining ways of improving and enhancing the management and implementation of this kind of programmes.

The approach for data collection has closely followed Terms of Reference³ and the methods have included:

Screening of data and information in Detailed Appraisal Reports (DARs) and project files from all 164 EEA and Norway Grants projects

- Questionnaire forwarded to all promoters to check up upon project data with a response rate of 55%⁴
- Three site visits
- Participation in seminar 'Lessons Learned and looking forward EEA and Norway Grants in the environmental sector' in October 2009. The seminar comprised participants from all member states, focal points, project promoter, FMO and Norwegian Ministries. The preliminary results of this review were also presented. The seminar provided the opportunity to collect viewpoints from all the main Focal Points and Project Promoters.

The aim of the activities has been to establish evidence for the assessment of the state of implementation and furthermore programme efficiency, effectiveness and sustainability against stated objectives. Finally, data and impressions

³ Terms of Reference is found in Appendix 7

⁴ Database structure with results of the review, questionnaire documents can be found in Appendix 2 and 3

have been used to addresses lessons learned with a view to improving programme implementations and the design of future programmes.

3.3 Case Studies

The consultant has prepared three case descriptions of which two have been followed up by site visits. The candidate projects have been selected on the basis of progress and size and location. Two cases have been selected among the Polish projects to reflect the large number of Polish projects;

- Project EE0019 "Reuse of Solid Combustible Waste in Cement Rotary Kilns of AS Kunda Nordic Tsement"
- Project PL0185 Stegna Thermo Modernisation of Social Assistance House
- Project PL0194 Thermo-modernization of the public utilities objects in the municipality of Chmielno.

The results of the site visits are included in Appendix 1.

3.4 Limitations and uncertainties

It is important to note that the scope and methods of this review have clear limitations in terms of providing detailed and quantified programme documentation and conclusions.

The review relies on figure and data provided by promoters and/or found in project files. However, the review has shown that all projects are not documented in the same manner. Quite a number of projects lack information on indicators such as baseline values or targets⁵. Hence estimates provided are based on those projects that have provided the relevant information. The evaluation team has in some cases been able to calculate missing information.

The review team have not been able to check the validity of all data. There are a number of issues possibly influencing the quality of data:

• It is a general impression that there is a lack of meters at project sites, hence estimations are based on more uncertain figures and converted on fuel consumption.

⁵ Baseline **and** target for energy consumption appears in **95** projects or 65% of the project; Baseline **and** target for CO2-emission reduction appears in **72** projects or half of the project documents;

Baseline **and** target for energy consumption **and** CO₂ emission reduction appears in **63** projects or 40% of the project documents

Renewable energy capacity **and** renewable energy production is recorded in 28 projects, or almost 70% of renewable energy projects;

Renewable energy capacity, renewable energy production, CO2 emission reductions are listed for **25** projects or 60% of renewable energy projects.

•

- tors (e.g. GJ versus MWh) has been identified. Figures have been corrected when noticed but there might still be misleading numbers in some cases.
- There is a general confusion on how and where to present the project indicator i.e. what to present as baseline and target. Some present the reduction as the target, and others the end consumption or emission levels as target. Again figures have been corrected in several cases, but misleading numbers might still remain.

Most of the projects are not completed and hence figures and anticipated results and impacts are still to be proven. The general picture is that most targets for energy savings and CO_2 reductions seem realistic, while investment figures seem to be underestimated, according to the evaluation teams' experience.

The review also includes 13 projects from 'The Norwegian Cooperation Programmes for Economic Growth and Sustainable Development in Bulgaria and Romania' and within the scope of the review it has not been possible to design a targeted way of reviewing these projects, which have a different scope than the more infrastructural projects of EEA and Norway Grants. Furthermore these projects are all in their very early stage. Consequently, the review of efficiency and effectiveness of these projects has only scratched the surface.

4 Overall description of the project portfolio

The following section describes the 152 project defined as infrastructural projects or 'hardware' projects, involving new or change of existing plants/buildings/other hardware.

The source of information provided in the following diagrams is the evaluation team database, if nothing else is referred to below the figure.

4.1 Geography

The allocation of the project portfolio by country can be seen in the diagram below.



Figure 4-1 Projects by Country

The majority of the projects are Polish with 88 projects. Only three countries are represented with more than 10 projects namely Poland, Slovakia and Hungary. The other countries are represented with a handful of projects or less.

The overweight of Polish projects is due to the size of Poland, the high activity by the focal point and the emphasis given in Poland to energy efficiency in the its energy policy.

4.2 Intervention Types

In this review we have defined a number of so-called 'intervention types'. These types describe the character of the intervention, and are defined in order to make certain comparisons possible, and we have endeavoured to define as few as possible. These abbreviations are used in a number of the following diagrams.

The following table 4-1 explains the abbreviations used for intervention types:

Abbreviation	Intervention type
EEB	Energy Efficiency in Buildings
HS	Changes of Heating Systems
ENV	Environmental protection
FS	Fuel switch
RE	Renewable energy
EEI	Energy Efficiency Industry
Waste	Handling of Waste

Table 4-1Definition of intervention types

The following diagram shows the allocation of the project portfolio by intervention type.



Figure 4-2 Project Portfolio by Intervention type

The intervention types represented in the portfolio of 152 projects are shown in the figure 4-2 above and allocated in 19 different individual intervention types and combinations of these. The majority of interventions are Energy Efficiency in Buildings (29%) followed by combinations of Energy Efficiency in Buildings and Changes of Heating System (26%) and Renewable Energy (12%). The remaining 33% of projects are spread over 16 intervention types.

The many sub-groups and combinations in the portfolio poses some challenges in providing reliable statistics for many of the sub-groups, especially when these groups are crossed with other criteria for instance geography. With very few observations in each group it is difficult to draw conclusions with certainty. Therefore, in the following when we are calculating averages and assessing effectiveness and efficiency of various measures, the calculation always includes at least three observations. The consequence of this 'rule' is that those groups that are represented with less than three are not reported on in the statistics. They count in the overall results and the qualitative observations, but not in the statistics.

The following figure, therefore, shows a subset of the project portfolio where only project with a one-dimensional interventions.



Figure 4-3 Project Portfolio by intervention type

4.3 Status and progress

Only about 22% of the projects have been completed, i.e. there is a project completion report available, where the realised results of the project can be studied and compared with the plans and targets.

Figure 4-4 Project Portfolio by project progress



4.4.1

Around 51% are in progress and 27% have just started, i.e. the first Project Interim Report, have not been submitted which is due after three months. The conclusion is therefore that we are looking at a portfolio of projects that are relatively early in the project cycle.

About 90% of the project promoters are public sector entities, and 10% are private sector entities. Private project promoters account for 15% of the eligible project costs.

4.4 Overall Achievements in Greenhouse Gas reduction and Energy Savings

Figure 4-5 Annual CO₂ reduction by country (tonne CO₂ reduced)

CO₂ -emission reductions



Figure 4.5 shows the overall achievement of the programme in terms of CO_2 reductions per year by country. The total annual reduction amounts to 173 000 tonnes. The largest reductions taking place in Estonia and Poland, followed by Latvia. The reason for the high reductions in Estonia is one project EE0019, which accounts for 71 000 tonnes per year. Poland has a high representation due to the high number of projects in the country.

4.4.2 Energy Savings

Figure 4.6 provides the overall energy reduction in a diagram.

Figure 4-6 Energy Reduction by Country (GJ/year)



The total energy savings obtained by the EEA and Norway Grants amounts to approximately 560 000 GJ per year. By far the largest savings in energy has been obtained in Poland with 525 000 GJ. Comparably all energy savings in all other countries only represent a fraction of the results obtained in Poland.

5 Results of the Review

This chapter provides the answers of the specific review questions included in the Terms of Reference for the assignment. The eight review questions are as follows:

- 1 Cost-efficiency i.e. cost per reduced ton of CO₂ and project returns (EUR/tonne, pay-back time if relevant).
- 2 Which of the measures supported are most effective in terms of greenhouse gas reductions?
- 3 Compare the results of EEA and Norway Grants funding with other greenhouse gas reduction measures taken in the beneficiary states – both in relation to cost-efficiency and overall impact.
- 4 Has it been necessary to support projects with short pay-back time in order to trigger measures? Is it possible to say something meaningful about the grant rate in such cases?
- 5 Assess other sustainability effects related to the projects (environmental, social, and economic).
- 6 Are the funds provided by the EEA and Norway Grants additional or supplementary for the various types of projects supported?
- 7 Assess effectiveness and impact of infrastructural versus "soft" projects in EEA and Norway Grants' project portfolio.
- 8 Assess the quality of the baseline and target values.

The review findings for each section are documented and discussed below.

5.1 Cost efficiency of the intervention

The cost efficiency of the projects has been calculated taking investment cost, operational cost and the CO_2 reduction over time into consideration. The methodology used is NPV (investment and operational cost over the lifetime of the project) / NPV (CO_2 reduction over the lifetime of the project). For a number of

projects typically energy efficiency projects with emphasis on insulation of buildings, there are no operational expenditure related to the project.⁶

The lifetime of the projects has been estimated individually, normally between 20 and 30 years, in some cases down to ten years depending on the project promoter's information in project applications and other documentation.

The discount factor used is 5% p.a., which is in the low end, but it should be taken into account that the financing is public and should be evaluated as such.

5.1.1 CO₂ reduction cost

Figure 5.1 shows the average CO_2 reduction cost for countries with more than three projects. For the whole programme the average costs is 29 EUR per tonne.

Figure 5-1 Average CO₂ reduction cost per country EUR/t CO₂



As can be seen, the average CO_2 reduction cost differs considerably from country to country with Greece with the highest cost and Estonia with the lowest cost. The Czech Republic and Hungary have also reduction costs in the high end. In all these countries the number of projects included is small and the intervention types differ.

The reason for the very low cost in Estonia is on single project EE0019, with reduction costs at only 3 EUR/ton. In section 5.3 these reduction costs will be compared to other similar projects and programmes.

⁶ Energy savings are not included in the calculation

Figure 5-2 shows that changes of heating systems, with a calculated cost of 25 EUR/ton $CO_{2,a}$ are the most efficient intervention type. Energy efficiency in buildings shows a cost of 49 EUR/ton CO_2 while renewable energy in average is around 36 EUR/tonne. Energy efficiency in buildings in combination with renewable energy has very high reduction costs. The reason is here that there are only few projects in that category, two of them with high costs (an air-to-air heat pump and a geo-thermal project, both in Hungary). The same goes for the category renewable energy and waste.

In a review of Polish projects from 2008^7 (hereafter referred to as the Polish review), the average CO₂ reduction cost is calculated at about 68 EUR/ton. The Polish review comprised many of the same Polish projects as this review and the higher average reduction cost can be explained by choice of different methodologies in the two reviews:

- The Polish review calculated the reductions using standard values, where as this review uses the reported figures from the project documents.
- The Polish review used a standard 20 years lifetime for all projects, where as this review uses individual lifetime depending on the type of intervention.
- The Polish review used simple sums of costs and benefits where as this review uses net present values to calculate the reduction costs per ton of CO₂.



Figure 5-2 CO_2 Reduction cost by intervention type EUR/t CO_2

⁷ Review of Energy Saving and Renewable Energy Projects in Poland, Final Report, Scanteam and Proeko CDM, Warsaw, Oslo, 8 January 2009 It should be mentioned that the Polish review underlines the wide variance of reduction cost for the projects reviewed ranging from 17 EUR/ton to 225 EUR/ton.

5.1.2 Energy reduction costs

The costs of energy reduction by intervention type are shown in figure 5.3. Changes of heating system have the lowest cost followed energy efficiency in buildings combined with changes of heating system. Renewable energy projects, on the other hand, are considerably more expensive. This is however not surprising as the aim of renewable energy projects are not energy savings per se.



Figure 5-3 Energy reduction cost by type of intervention - EUR/GJ

5.2 Effectiveness of the intervention

The effectiveness of the intervention is measured on the finalised project and compares the achieved reduction of CO_2 and energy consumption with the baseline. This is done by intervention type and country. Only 32 projects are finalised and for only two types of interventions (EE buildings and EE buildings in combination with changes in heating systems) sufficient data has been available in order to draw any valid conclusions.

5.2.1 CO₂ reductions in percentage of the baseline

The following figure 5.4 shows the relative reduction in CO_2 emissions compared to the baseline. Energy efficiency in buildings, combined energy efficiency and change in heating systems and renewable energy all have effective-

ness above 50% which is considered to be satisfactory. For heating systems the efficiency is considerably lower, but it should be observed that there are only very few projects in this group.



*Figure 5-4 Relative CO*₂ *emission reduction by intervention type*

Figure 5.5 below shows the corresponding figures for these intervention types in the four countries with sufficient data available. The projects from Slovakia have the highest effectiveness in terms of CO_2 reductions.



*Figure 5-5 Relative CO*₂ *emission reduction by country*

5.2.2 Energy reduction in percentage of the baseline

Figure 5.6 shows that there are specific differences in relative energy reductions between the countries. As mentioned in section 5.2.1 only countries with sufficient data are included. It should be noted that only finalised projects are included in the diagram and that only a limited number of the projects are finalised at this stage.



Figure 5-6 Relative energy consumption reduction by country

The low effectiveness of the Polish projects needs an explanation, especially when you compare the same statistics by intervention type where Energy Efficiency projects have a high effectiveness. Nearly all Polish projects are energy efficiency projects.

However, one project (PL0339 - Extension of district heating system in Radom) is resulting in an increase in energy consumption and is recorded with comparable high energy consumption and therefore, impacts the average very considerably. When this project is excluded, the effectiveness in Poland increases to 45%. In parallel, there is a similar case with another heating system project in Poland (PLO341 - Wojnowo construction of bio gas plant) that impacts the average considerably – if this project is excluded, the effectiveness will increase to 51%.



Figure 5-7 Relative energy consumption reduction by intervention type. Reduction compared to baseline (percentage)

Figure 5.7 shows that the relative energy consumption reductions in completed projects amounts to 57% for energy efficiency project and 49% for energy efficiency projects combined with heating systems and 45% in energy efficiency combined with renewable energy projects. The effectiveness of the projects seems in general to be satisfactory with a reduction around 50% of the original energy consumption.

Renewable energy projects are 'negative' because they only replace one energy source with another and in some cases result in increased energy consumption after the intervention, because the project include an element of extension (use of more buildings or more users in the form of students/children/patients). Please note, that it is not the reduction in use of fossil fuels, but the reduction of energy consumption from all energy sources, that is shown in Figure 5-7. Regarding renewable energy projects is can be added that some 41 of the 150 projects use a share of renewable energy in the energy consumption. Only ten have information about both the target for energy consumption and the energy production from renewable energy. The share of renewable energy consumption from these ten projects is 29 %. Only three of the projects involve a total exchange of energy supply from fossil to renewable energy.

5.3 Compare results with other greenhouse gas reduction measures in the beneficiary states

In order to compare the results from EEA and Norway Grants with other reduction measures in the beneficiary states, COWI has established a reference database. Most of the information for these references has been found on the internet - official websites. COWI has added limited information from our own experience also. Appendix 5 provides the details about the database and the sources. The reference database comprises around 150 projects. The main problem with this database is an overweight of Bulgarian projects, which comprise nearly 50% of the total projects (Bulgarian Energy Efficiency and Renewable Energy Credit Line). Most of the projects are concluded in the period from 2005 to 2008.

The database compiled by COWI comprises the countries listed in the diagram below. The reference selection is a mix of Central European countries and Western European countries. As can be seen from figure 5-8, there are large variations between the countries with an average of 35EUR/ton CO_2 .



Figure 5-8 CO₂ emission reduction cost by country (EUR/t CO₂) reference projects

Figure 5-9 below compares the CO_2 reduction cost in the EEA and Norway Grants projects with the selected reference projects. The diagram shows that including the large projects in Estonia (EE0019), the average CO_2 reduction costs are lower than the average in the reference projects, i.e. 35 vs. 29 EUR/t CO_2 .

When EE0019 is omitted the average is 42 EUR/t CO_2 . The carbon emission cost in the EEA and Norway Grant's project portfolio is in other words close to the average of the reference projects.



*Figure 5-9 CO*₂ *reduction cost comparison between EEA and Norway Grants and the reference projects (EUR/t CO*₂)

Figure 5-9 also shows the large differences between the countries. It should be noted that there are only few observations from EEA and Norway Grants' portfolio in most countries, except Bulgaria and Poland. For Bulgaria it can be seen that EEA and Norway Grants are in line with the reference projects and for Poland EEA and Norway's Grants' average is actually below the reference, which only consist of few projects. The variation in Czech Republic and Hungary are probably caused by the fact that the project portfolio in these countries is small and CO_2 emission savings only are secondary targets in the projects

The variations in average costs per saved ton CO_2 between EEA and Norway Grants and the reference portfolio are assessed as acceptable, especially taking into consideration that EEA and Norway Grants does not have specific targets for the cost level and pursue several goals in nearly all the implemented projects. The projects in the reference portfolio are most likely more directly focussed on saving CO_2 emissions.

Figure 5-10 is collected from the report 'Territorial cohesion - An analysis of environmental aspects of the EU Cohesion Policy in selected countries'.⁸ The figure shows the cost efficiency of Structural Fund spending in terms of reducing carbon emissions in seven regions in Austria, which are in average 202 EUR/t CO₂. The reduction costs range from 31 to 303 EUR/t CO₂. The data is based on emission reductions of 300 000 tonne CO₂ per year from renewable and energy efficiency projects in Austria.



Figure 5-10 Cost efficiency of Structural Funds in Austria EUR/t CO₂

⁸ Environmental Network of Environmental Authorities, Technical report No. 10 2009
That the CO_2 emission costs realised by EEA and Norway Grants are generally not higher than comparable projects is also supported by the information in the Figure 5-10.

5.3.1 Comparison by intervention type

Figure 5-11 below presents a comparison of EEA and Norway Grants and the reference projects in terms of intervention type. Only the intervention types most relevant for comparison have been included in the figure.

The diagram shows that for energy efficiency and heating systems EEA and Norway Grants' intervention has been more expensive than the reference projects. For renewable energy projects, the cost level is more or less equal to the reference projects.

Figure 5-11 Comparison of carbon emission reduction cost for selected intervention types $EUR/t CO_2^{9}$



The explanation is most likely that most of the EEA and Norway Grants' projects combine many targets, of which CO₂ reduction is only one. Often the interventions, like *energy efficiency* in buildings and *changes of heating systems*, are implemented in combination with general building rehabilitation with no possibility to separate between the costs resulting in relatively higher costs compared to the more targeted reference cases. *Renewable energy* is often demonstration or awareness activities and not combined with other investment activities. For *heating systems* the difference might also have the following explanations (1) Scale - The reference projects are typically JI projects that requires a certain scale before it is worthwhile undertaking the considerable

⁹ The average figures refer to all projects in the two groups. The average for the category 'Other' (EEA) includes EE0019, without this project the EEA average for 'Other' would be 44 EUR/tCO_2 .

transaction costs and scale reduces unit costs (2) In some cases, where EEA and Norway Grants' projects integrate rehabilitation and extension of the heating system in the same project, the baselines and the emissions reductions are complicated to assess for the extension of the project. It must be assumed that JI projects have established more accurate baselines (3) Those projects often include fuel switch from coal/heavy fuel oil to natural gas or renewable energy fuels with very different reduction costs as a result. It is not possible to correct for this factor in the group of reference projects, because the actual fuel switch is not known.

5.4 Support strategy and eligibility criteria

According to the rules and procedures for the implementation of the EEA and Norway Grants financial mechanism 2004-2009, the grants should be determined on a case-by-case basis. However, there is a grant ceiling saying with some exceptions the grant rate should not exceed 60%. The exceptions are:

- Projects where 15% or more of the project costs are co-financed by central, regional or local government budget allocations may receive a grant rate up to 85%
- NGO activities or seed money or scholarships may receive grant assistance up to 90%. Domestic co-financing will normally be required.

Out of 147¹⁰ infrastructure projects more than half received a grant share of 85% or more, because most of the projects are public interventions with a grant level of 85%, please refer to table 5-1.

Grant share	Number	%
more than 85%	3	2%
85%	77	52%
60%-85%	41	28%
Less than 60%	26	18%

Table 5-1Grant share for infrastructure projects

Out of the 147 infrastructure projects, 100 projects have reported annual energy savings. The majority of these projects are from the intervention types: energy efficiency and changes of heating systems. The remaining has not reported energy savings, either because the project was not addressing energy savings directly or because the figures were not recorded. Of the 100 projects 57 had a grant share of 85% or more while 43 had a grant share less than 85%.

¹⁰ Information to do the calculation in Table 5.1 was insufficient for five projects

The evaluation team has calculated the financial return on these 100 projects. It has been assumed that 90% of the energy savings are attributed to coal (1.9 EUR/GJ) and 10% to diesel (0.8 EUR/GJ). The return is calculated by comparing the savings in energy with investment over the lifetime of the project.

It is assumed that an acceptable and sufficient return¹¹ on the investment should be between 5% p.a. and 7.5% p.a. The 5% p.a. is the calculation rate for most public entities and 7.5% p.a. is a request from private investors in infrastructure projects. Of the 100 projects with recorded annual energy savings, almost 40% have a rate of return on their investment lower than 5% p.a. indicating that a higher grant rate is required for these projects. Approximately 35% of the projects have a return that is higher than the required 7.5% p.a. Thus only 25% of the projects have received a well-targeted grant share. The consequence of this is that EEA and Norway Grants effectively could support more projects by optimising the grant share.

There is no clear relation between type of intervention, grant share or size of project and the return on investment. However, in general projects implemented in Poland have the highest returns on investment after grant. As pointed out by the Polish Focal Point, the municipalities in Poland have very limited access to finance and low own financial resources. Stricter requirements to the return of the projects might therefore impede some municipalities with interesting projects in obtaining grants.

5.5 Assess other sustainability effects of the projects

The sustainability objectives of the programme are quite broad, and the specific priorities differ among the countries. Hence, it has not been possible to estimate the sustainability impact on a quantitative level. However, information obtained in project documents, estimations and impressions from site visits have established a basis for presenting aspects and scope of the sustainability effects of the programmes.

A more focused, simplified and uniform way of documenting the expected and achieved sustainability effect in a future round of the programme could be improve future reviews/evaluations of these aspects. The documentation requirements should, however, be well-conceived and tailored to potential projects.

5.5.1 Overall review results

On the basis of information obtained through project documents, the review has rated all projects according to their impact on the long-term, cross-cutting sustainability development issues of environment, economics and society. The result is shown in table 5-2.

¹¹ By return we mean, The Internal Rate of Return (IRR) of the project. The IRR was calculated based on the project promoter's estimation of the investment, not the actual investments. The realised investment might differ considerably from the anticipated

The review found that "environmental sustainable development" is characterised as being fundamental to a majority of the projects (82%), while economic and social sustainable development seems to play a less significant role in the projects. However, by studying project documents, the results of the questionnaires and input from interviews and site visits it becomes clear that economic and social developments are indeed important aspects of the projects and in many cases just as important as greenhouse gas reductions.

The impression from the site visits was that the reason for the relatively high rating of the importance of environmental aspects perhaps has more to do with the overall objective of the EEA and Norway Grants' programme, structure of the application and the formal requirements than with the actual motivation of the projects.

	Sustainable development- Environment	Sustainable development- Economic	Sustainable development- Social
No information	10 (7%)	10 (7%)	10 (7%)
Not important/insignificant	1 (1%)	132 (87%)	120 (79%)
Important part of project	16 (11%)	10 (7%)	20 (13%)
Fundamental to the pro- ject	125 (82%)	0 (0%)	2 (1%)

Table 5-2Rating of sustainability effects and their importance.

Source: Grant Decision Documents of 150 projects

5.5.2 Environmental effects

83% of the projects are evaluated as having environment as the fundamental objective. The environmental improvements are first of all related to the reduction in consumption of coal and other fossil fuels. Some of the promoters have been very detailed about achievements also in the case of SO_2 , NO_x , dust and particulates, but on the overall level figures are not uniform and consolidated and can hence not form the basis for an overall estimation.

In most of the projects, the baseline fuel is coal, and heat is produced by small, inefficient boilers; hence the environmental impact of improved energy efficiency in buildings or changes in heating systems must by significant. As described in section 4.2, energy efficiency in building is the dominating innovation type followed by a combination of energy efficiency and changes in heating systems, while changes in heating systems without simultaneously improving the energy efficiency, is not widely used. Figure 5-4 and 5-7 therefore show the significant impact from the dominating intervention types.

Another important impact is the local or regional air pollution related to SO_2 , NO_X and dust and particles, which is of great importance to the quality of life, public health and nature. No quantitative assessment was made of these impacts, but the review of the documentation shows that projects related to build-ing renovation and/or modernisation of heating systems typically operates with

a 50-100% reduction of SO_2 emissions, NO_X and dust and particles. However, information is only available for a limited number of projects.

Promoters were also asked about other environmental impacts. Of the 78 responses to the questionnaire:

- 39 state that SO₂ has been reduced
- 40 mention that NO_x has been reduced
- 40 mention that dust or particles have been reduced
- 19 mention that noise has been reduced.

There are several other kinds of environmental impacts listed by promoters who have carried out different types of projects. Examples include:

- quality and availability of drinking water
- decrease in heavy metal pollution by improved battery scrap collection
- improvement of sanitary and health conditions and enhancement of the quality of nutrition by use of biogas plants.

5.5.3 Social effects

Even though that almost 80% states that sustainable social development is not an important aspect of the project, there is no doubt that the projects have had a significant impact on the social development of the municipality or town involved.

The grant scheme has successfully combined the environmental objective of supporting public institutions in beneficiary countries. Of the 164 projects, almost 100 projects deal with renovation and improvement of energy systems in public buildings. Of those

- 262 buildings or energy systems in schools and higher educational institutions are addressed in 63 projects.
- 19 buildings or energy systems for kindergartens are addressed in 12 projects.
- 37 buildings or energy systems in the health sector are addressed in 21 projects.
- 29 buildings or energy systems in recreational or cultural institutions are addressed in 21 projects.

The sum of projects exceeds the 100 projects mentioned above because several projects that relate to more than one category of public buildings. Considering the massive need for energy renovation or upgrading of public buildings in the beneficiary countries and the general lack of financing, this is a very important aspect of the grant facility.

Impressions from site visits confirm the impression that projects have made a big difference for the municipalities involved.

Responses from the questionnaire reveal that other, positive social impacts on health and well-being were generated by the projects. Of the 78 respondents to

- 48 state that learning environment has been improved
- 53 state that the project improved the working environment;
- 34 state that the healthcare environment has been improved.

5.5.4 Economic effects

the questionnaire:

The issue of projects impact on economic development is dealt with in many different parts of the application material and guidance. In reviewing the material, it becomes clear that in terms of economic development the programme and project objectives are unclear and dealt with in a very incoherent manner, which makes it difficult to identify and describe the impact.

According to grant decision documents (GDD), the overall importance of projects in relation to economic development is relatively low. Only in very few of the projects economic development is considered a fundamental part of the project. However, it appears as a very general and simplified assessment not really considering the detailed issues, which are outlined in other parts of the application material.

The only explanation of what is considered economically sustainable development targets in the context of the programme is detailed in the template for appraisal reports, which lists the questions:

- Does the project strengthen financial tools for ecosystem protection?
- Have the costs of all ecosystem effects been taken into consideration?
- Are all the financial drivers of the project sustainable?
- Has the polluter pays principle been followed?

The independent consultants drafting the reports have rated the projects in relation to these parameters (very poor, poor, adequate, good, very good and n/a). The opinion of the review team is that the listed areas appear somehow too theoretical and that the outcome of the rating is useless as it does not relate to specific project objectives or impacts. As a result, a overwhelming part of the project ratings with regard to the four question fall in the categories of "adequate" or "n/a".

The most relevant information about economic impact is found in the applications (APFs) where promoters are obliged to add text about the economic impact. However, the quality, scope and details of the information provided vary and are difficult to compare. The overall impression is that projects are expected to have an effect on economic development, yet in most cases this is a fairly short-term/direct impact related to direct employment.

The impact of the grant on the financial situation of the beneficiary is indeed difficult to quantify, the general impression however being that the substantial reductions in energy expenditures are of great importance and in Poland projects also lead to reductions in the CO_2 taxes that energy consumers have to pay.

Employment impact identified by project promoters

The documentation of the EEA and Norway Grants only includes limited, specific data and information about job creation. Therefore, the questionnaire asked all promoters to list the number of permanent and temporary jobs created during project implementation. Answers, see Table 5-3, provided by promoters vary and relate to the direct temporary and permanent employment generated by the funding within own organisation or among project partners.

Job creation	Temporary job creation (no. of projects within the category)	Permanent job creation (no. of projects within the category)
0	23	30
1-5	5	11
5-10	2	3
15-20	5	0
More than 20	10	0
n/a	41	44
Total jobs cre- ated	463	43

Table 5-3 Employment impact of EEA and Norway Grants projects

Source: based on 88 projects amounting to 57% of the total grants provided

If figures of direct temporary and permanent employment impact obtained through the questionnaire are scaled up to all projects in the portfolio according to the size of the grants, it would result in a direct temporary employment impact of 810 new jobs and a permanent employment impact of 75 new jobs.

Employment impacts related to investment in renewable energy and energy efficiency in general

The employment figures estimated above are linked to the direct and local impact of the grant project, which is somehow known or visible. However, renewable energy and energy efficiency projects also have more wide-ranging impacts.

In order for the review to be able to assess these more indirect impacts of the project, the review included a survey on employment impact studies. The result of this survey is listed in Table 5-4.

	Employ- ment pr. million EUR in- vested	Calcula- tions basis	Year	Source of data
Biogas	10.2	Denmark	2009	Fagligt Faelles Forbund (2009), Green Jobs
Geothermal	10.4	Denmark	2009	Fagligt Faelles Forbund (2009), Green Jobs
Wind Turbines	10.4	Denmark	2009	Fagligt Faelles Forbund (2009), Green Jobs
Heat Pumps	13.4	Denmark	2009	Fagligt Faelles Forbund (2009), Green Jobs
RES in general	19.3	Europe 27	2010	http://ec.europa.eu/energy/renewables/studies/doc/r enewables/-2009_employ_res_summary.pdf
Geothermal	0.4	USA	2005	http://www.geo- energy.org/aboutGE/employment.asp
Biofuels and RE	11.7	China	?	http://www.unep.org/labour_environment/PDFs/Gre enjobs/UNEP-Green-Jobs-E-Bookp85-129- Part2section1.pdf
Wind	15.0	World	2006	http://www.unep.org/labour_environment/PDFs/Gre enjobs/UNEP-Green-Jobs-E-Bookp85-129- Part2section1.pdf
Energy efficiency, residential buildings	12.9	France	2000	http://www.eceee.org/conference_proceedings/ecee e/2001/Panel_1/p1_7/
Energy efficiency, residential buildings	9.5	Germany	2000	http://www.eceee.org/conference_proceedings/ecee e/2001/Panel_1/p1_7/
Energy efficiency, residential buildings	9.3	United Kingdom	2000	http://www.eceee.org/conference_proceedings/ecee e/2001/Panel_1/p1_7/
Energy efficiency, residential buildings	14.2	United Kingdom	2000	http://www.eceee.org/conference_proceedings/ecee e/2001/Panel_1/p1_7/
Energy Savings in Public Buildings	8.5	Denmark	2009	Fagligt Faelles Forbund (2009), Green Jobs

Table 5-4Survey of employment impact studies

It is important to note that such estimations are difficult to make and that the methodology applied differs. Some of the studies operate with different kinds of employment impacts. The DG TREN study (2009) for examples operates with employment impacts divided into the different phases of implementation (e.g. investment related to respectively construction, O&M and fuels). Furthermore, the EU employment study and the Danish analysis "Green Jobs" present employment impacts in direct gross and indirect effect respectively. Direct effects relate to the economic sectors and activities directly involved in investment in RES plants, their operation and maintenance and the production of fuels, while the indirect gross effects include the industries involved in the supply chains of the renewable energy or energy efficiency industry.

Even so, table 5-4 above provides a point of reference for estimations of the employment impact in this review. Conservatively, it is assumed that renewable

energy investments create 10 jobs per million EUR invested and that energy efficiency investments generate eight jobs per million EUR invested.

	Total em- ployment impact, en- ergy effi- ciency pro- jects (no. of jobs)	Total em- ployment impact, combined RES/energy efficiency projects (no. of jobs)	Total em- ployment im- pact, RES projects (no. of jobs)	Total employ- ment impact, other projects (no. of jobs)	Total esti- mated em- ployment impact
No. of jobs	672	215	146	55	1,088

 Table 5-5
 Employment impact of EEA and Norway Grants projects

The table above shows a quite conservative estimate of the employment impact, and if we adjust key figures for employment impact to e.g. 15 jobs per million EUR invested in renewable energy and 10 jobs per million EUR invested in energy efficiency, which is probably more realistic considering the assessments listed above, the corresponding overall employment impact will be 1,750 jobs.

Furthermore, the respondents to the questionnaires also revealed that the total costs of the projects appear to have a certain overrun and might be around 10% higher than presented in the Grant Decision Documents. An increase of the total budgets of the project would also increase the overall employment impact by 175 jobs.

The employment impact estimated in table 5-5 overlaps with the employment impact registered in the questionnaire survey.

In conclusion, the employment impact of the164 EEA and Norway Grants projects, ranges between 635 jobs, as reported by promoters, and 1 750 jobs, following calculations described above.

5.6 Targeting the EEA and Norway Grants

The review found that most EEA and Norway Grants' projects are funded through funds from EEA and Norway Grants and promoters' resources. Only a few of the promoters list any other support programmes.

In answering the questionnaire, only 7 of the 82 respondents reply that their projects have received grants from other funds, whereas the first screening of project documents showed that 8 out of the 152 had received funding from other grant schemes.

Taking into account the relatively high funding rate (85%/60%) of the programme, it is not surprising that most of the projects are funded only by EEA and Norway Grants support and own finance. On closer scrutiny it is found that additional funds have been applied in cases where the project budget is

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higher than the planned budget listed in the GDD. In other cases, other funds have been used to co-finance projects, mainly renewable energy plants.

The projects documents reveal that most of the promoters have experience of other programmes, such as SAPARD, PHARE and structural funds. This indicates that the project promoters find that EEA and Norway Grants support schemes are well-targeted to their specific project needs; otherwise they would use other financing sources.

It is evident that the EEA and Norway Grants cover more or less that same area as the national defined programmes under the European Regional Development Funds (ERDF).

Moreover it seems that most of the beneficiary countries have national, regional and local environmental protection funds which also support areas of greenhouse gas reduction. Due to its limited scope, the review does not include a comprehensive analysis of the different types of national funds and whether and in which countries the EEA and Norway Grants' funds are complementary or supplementary.

In the Polish case studies it turned out that the EEA and Norway Grants' funds had filled in an important gap at the time of the actual call, however, in both case- studies promoters are now approaching the ERDF funds with similar kinds of projects undertaken.

On the overall level, the need for support to greenhouse gas reduction projects is huge, and overlapping grant schemes would not result in any drainage problems. However, it makes sense to consider the national framework conditions and focus EEA and Norway Grants programmes on a few priority sectors where the need is evident and other funds are lacking or have a limited coverage. A more narrow and prioritised focus of EEA and Norway Grants would also increase the potential for exchange of knowledge between the projects, development of benchmarks and tools to support optimal implementation of projects.

5.7 Effectiveness and impact of soft versus infrastructural projects

The project portfolio has been divided into 'infrastructure' and 'soft' projects due to their very different nature and characteristics - and resulting different impacts. An important objective of the review is to analyse effectiveness and impact in terms of CO_2 reductions and the cost of these for the different project types, sectors and countries. However, only the infrastructure projects have well-defined CO_2 reduction targets/objectives, against which results can be measured, whereas the soft projects have not formulated any project or programme-specific objectives for the reduction of greenhouse gases.

Hence, it is a methodological challenge to compare these two different groups of projects on equal terms, in particular when it comes to impact. However, this analysis will not be based on the objectives for reduction of greenhouse gases and energy savings, but for soft measures the assessment will to the extent possible, focus on achievement of the projects' formulated objectives and the additionality and supplementarity of the infrastructure projects.

5.7.1 Characteristics of soft and technical projects

The criteria for the selection of soft and infrastructure projects are:

- Is the weight on behavioural change of beneficiaries or on measurable infrastructural targets regarding greenhouse gas emissions and energy savings?
- Is the focus on awareness raising and capacity building or on technical solutions?

	Soft projects	Infrastructure projects
A total number of 164 projects	12	152
Countries of imple- mentation	Bulgaria, Romania and Poland	Bulgaria, Czech Republic, Cyprus, Estonia, Greece, Hungary, Latvia, Malta, Poland, Ro- mania, Slovakia, Slovenia, Spain,
Type of intervention	Awareness raising/capacity building, educational programmes and small- scale pilot project implementation	Energy efficiency by sector, heating system rehabilitation, fuel switching, renewable energy, waste etc.
Objective	Awareness raising among the popula- tion, environmental capacity building of relevant beneficiaries/institutions (e.g. research institutions and ministries), knowledge exchange, promotion of en- ergy friendly initiatives etc.	Energy efficiency in public buildings (including renovation, modernisation and thermal insula- tion), installation of renewable energy sources, modernisation of heating systems, and waste handling.
Project start and duration	Average duration of 21 months, the shortest lasting one year and the long-est 27 months.	The project duration is 16 1/2 months on the average, with the shortest project lasting five months and the longest lasting 31 months.
	The majority of the Grant documents was signed between April and June 2009, but often lacks of evidence of start or development of project. None of them have been finalised.	Only a small number of the projects have been finalised.
Investment	A total of around EUR 12 million with an average of EUR 929,561 per project. The smallest investment made is EUR 165,000, and the largest EUR 2.4 mil- lion	A total of EUR around 98 million with an aver- age of EUR 670,320 EUR per project. The smallest investment being EUR 145,824 and the biggest EUR 3 million

 Table 5-6
 Summary of soft projects vs. infrastructure projects

Relevant characteristics have been identified for each of the two project groups based on the databases elaborated for the review. These are shown in table 5-6 above.

5.7.2 Effectiveness and impact

The assessment of both effectiveness and impact is difficult because many of the projects are still in progress and have not yet been finalised. Therefore, it is not possible to assess long-term effectiveness and impact.

In this review, effectiveness and impact will be based on estimates on the expected outcome of the intervention, which will be compared with the baseline in order to qualify the impact of the programme and its projects.

Awareness raising is a central part of the objective of the majority of the soft projects, indicating in some way or another that the baseline is characterised by lack of knowledge of environmentally sustainable behaviour - often concerning energy efficiency and energy savings.

The majority of the soft projects use a methodology where training, education and awareness raising are combined with small demonstration/pilot projects. This methodology of learning by doing/experiencing the result has been regarded useful to obtain and maintain behavioural change. If the immediate result is regarded worthwhile by the beneficiary and if the necessary conditions for behavioural change exist, the chances of long term impact are much better. Hence, it is recommended to combine awareness/educational projects with demonstration elements to ensure the long-term impact of the intervention.

Contrary to the infrastructure projects, the soft projects only have very limited measured CO_2 emission reductions. Hence, they should not be promoted due to a high energy profile, but due to other elements leading to an environmentally sound conduct. The soft projects should be promoted due to alternative cooperation partners, NGOs etc., representing a target group with difficulties of obtaining grant from other institutions.

5.7.3 Cost efficiency

It turned out to be very difficult to assess the cost efficiency of soft measures in an overall review such as the present as the projects differ in scope and include activities that are hard to assess in terms of their scope and extent. The cost efficiency of the soft measures should not be approached by assessing to which extent the desired effects/outputs have been achieved at reasonable cost/input, which is the standard definition of cost efficiency. Instead, the team aimed at using evidence from project documents indicating if projects have delivered the agreed outputs efficiently in accordance with plans, i.e. on time and on budget. Unfortunately, this was not possible as none of the soft projects had been finalised, and it is questioned if the majority has even started yet.

5.7.4 Additionality and supplementarity

The soft projects are found to represent potential additionality and supplementarity to the infrastructure projects through awareness and education on relevant subjects illustrated by the infrastructure projects. This additional and supplementary potential is presently not formally acknowledged; hence it would be a great advantage to establish procedures for formal exchange of experience and interaction between soft and infrastructure projects. The benefits of this interaction between awareness/education and technical demonstrations at large scale corresponding to the educational subjects would add to the benefits of the programme.

The soft projects are very much in line with the core areas of the EEA and Norway Grants programmes: environment and sustainable development. This is partly because the soft projects generally have an objective pointing towards environmental education or awareness raising, but also due to the programmes' extremely broad focus areas.

5.8 Assess quality of the baselines and target values

The following is a brief assessment of the quality of the information available from the project documents. Information about baselines and target values was collected from 152 projects based on existing project documents corrected and supplemented by information from questionnaires. Table 5-7 shows the number of projects where information on main indicators such as energy consumption, CO₂ emissions and renewable energy was found in the projects documents being Application, Detailed Appraisal Report and Progress Report.

The first column shows for each main indicator the number of projects having the information recorded in the project documents. The next column gives number of corrections based on information received from the questionnaires. The third column gives the number of additional information obtained from questionnaires.

More than 52% of the promoters have returned the questionnaire which was sent out with two reminders. COWI received the last replies on 18 November 2009.

All project documents were reviewed and major deviation from standard figures were checked and corrected when necessary. The number of these corrections is not recorded but the typical errors are mentioned below. The number of corrections based on information from questionnaires was minor while the number of additional information was significant for several key parameters. In this respect it can be concluded that the quality of information recorded in project documents in general was good but insufficient in number.

Table 5-7Number of recorded information in project documents and ques-tionnaires

	Project Documents	Questionnaires	3	Total
Main indicators		Corrections	Additions	
Energy consumption				
Information on baseline	80	2	20	100
Information on target	79	4	19	98
Information on emission reduc- tions*	98		6	104
CO2 emissions	·			
Information on baseline	60	0	21	81
Information on target	59	1	23	82
Information on reductions*	111	0	4	115
Renewable energy				
Information on capacity	20	2	10	30
Information on production*	32	4	6	38

* Information on emission reductions refers to total records i.e. projects that only record information about emission reductions without information on baseline and target plus projects that records baseline and target.

It is our assessment that there have been a number of misunderstandings and errors in the project documentation that could be improved.

Typical errors recorded and corrected are:

- Conversion from Joule (kJ/MJ/GJ) to Watt-hours (kWh/MWh/GWh) often with a factor 1000.
- Misunderstanding that energy consumption from renewable energy sources are listed as reduction in the energy consumption or confusion of fossil fuel energy consumption and overall energy consumption.
- The most common mistake is to list energy saving or CO_2 emission reduction target in the baseline instead of the actual anticipated energy consumption and CO_2 -emission level. This is the case in quite a large number of projects. A situation that easily could be avoided improving the training of the staff at the focal points, which should be able to spot these errors and misunderstandings.
- In some cases it has been observed that the energy baseline and CO₂ baseline are inconsistent. For instance the district heating extension project in Radom in Poland, where it seems that the energy consumption of the new customers following from the extension of the system have not been included in the baseline for energy consumption, while their CO₂ emissions from the new customer have been included in the baseline for CO₂ emissions.

Review of support to Greenhouse Gas Reductions

6 Conclusion and recommendation for the future programme

6.1 Findings and Conclusions

This study has reviewed 164 projects in a total of 13 beneficiary countries. The programme is addressing seven different types of interventions: improved energy efficiency in buildings, changes of heating systems, environmental protection, fuel switch, renewable energy, improved energy efficiency in industry and handling of waste.

The majority of interventions are related to energy efficiency in buildings. These projects have either been pure energy efficiency projects or energy efficiency projects integrated in general building renovations. The integrated approach is considered reasonable because basic costs are shared. However, it has shown to be difficult to separate costs of the energy efficiency measures and general building renovation costs and therefore the cost per reduced ton of CO_2 from this programme ends up in the higher end compared to other more specific CO_2 reduction programmes.

Most of the thermal renovation projects in public buildings are minor projects but in addition to the thermal renovation projects there is especially one large industrial project in Estonia that will result in 42% of the total expected CO_2 emission reductions from the reviewed projects. The CO_2 reduction costs from this project alone will be 3 EUR/t compared to 42 EUR/t as an average for the remaining 163 projects.

The size of the grants are determined on a case-by-case basis but almost 35% of all projects receive more grant than needed while around 40% need more grant. This calls for a more focussed assessment during project preparation. This view is referring to the grant level in relation to the anticipated investment costs, not the realised investment costs that might differ considerably.

In addition to reductions in CO_2 emissions, the review identified significant reductions in other pollutants like SO_2 , NO_x , particles and noise however these environmental improvements are only reported in qualitative terms. Only half of the EEA and Norway Grants projects have reported on job creation, but scaled up the direct job effect is likely to be 885. International studies show a range of 10-15 jobs per million EUR invested in renewable energy and 8-10 jobs per million EUR invested in energy efficiency. Using these figures, the direct job effect should be up to 1750 jobs.

Several other schemes support similar interventions as the EEA and Norway Grants. Nevertheless, there is a large need for these interventions and many project promoters report that the EEA and Norway Grants is filling a gap. The EEA and Norway Grants are addressing a large number of different types of interventions and scales of projects. The findings of this review show that there is a large CO_2 reduction potential at low cost in industries, but only few of these projects have applied for support from EEA and Norway Grants. The grants receive a large number of applications from public institutions and though the reduction costs are higher compared to the large industrial projects, it seems that public institutions find EEA and Norway Grants an attractive scheme.

6.2 Lessons learnt and recommendations

Based on the findings of this review, it is recommended that the programme should maintain focus on energy efficiency in buildings and change of heating systems in the public sector in Central European countries. The potential and needs are enormous in these sectors and resources scarce. Further, these sectors have a high priority on the national energy policy agendas.

It is considered strength of the programme that the beneficiary countries are so closely involved in the priorities of the grant programme. This ensures strong alignment with national priorities in the national energy and climate change policy.

Regarding the eligibility criteria and grant level, we recommend a closer assessment of the grant awarded to each project in order to avoid the tendency towards overcompensation seen in approximately one third of the projects reviewed.

Administratively, we recommend simplifying the procedures. Disbursement of funds is linked to monitoring and submission of progress reports which has created incentives for frequent monitoring. The Focal Points monitor the projects closely with progress reports on a three-month basis. This could be changed to monitoring at an annual basis. The current management and monitoring system is very detailed to a level where the quality of data cannot follow suit unless an effort is made to train the Focal Points and, in some cases, also the project promoters. The main benefit from the current monitoring system is easy access to overall programme progress to the extent that the project data in the system are reliable.

Appendix 1 Case Studies

Project Name

Stegna - Thermo Modernisation of Social Assistance House

Background of the project

The municipality of Nowy Dwór Gdaski is located in the Northern part of Poland and have a population of around 19.000. The area has for many years suffered from a deteriorating air quality with a very high emission of pollutants mainly resulting from heat production based on old and inefficient coal boilers. This lead to the adoption of a Environment Protection Program 2004-2011 and introduction of environmental fees to be paid by those emitting high level of CO2.



In 2004 the old peoples house in the village of Stegna found itself in a very desperate situation. The building was in a very bad condition as no renovation had been carried out since its construction in the 70ties and residents suffered from a cold and unhealthy indoor climate. Moreover the institution had to pay a very large env-

ironmental fee, due to the high emission of pollutants from the old and inefficient coal boiler. The municipality did not have the financial capacity to support the institution and the decision to close down was considered. Fortunately, the institution was informed about the option of applying for a support through the EEA Grant and effort was put into developing of a qualified proposal. It was decided to opt for a very ambitious project, not only improving the building envelope and heating system but also integrating both biomass and solar heating. At that time this was no such buildings in this area of Poland and locals was quite surprised by the idea.



In 2007 the project was approved by the FMO and the institution could start up work. To begin the old people living in the house was sceptical and a bit afraid about the changes, but today everybody is very satisfied and proud about being part of the project. The project is very well known in the area and many public

institutions are visiting the place and get inspiration from the demonstrated solutions. Moreover the municipality has got much more confidence in these kind of projects and has since started developing similar projects to be co financed by external funding source. On the national level the Stegna old peoples house has become famous within the organisation of social assistance institutions and the place often receives visitors from around Poland.



The project

The social assistance house offers a 24 hours social assistance to its residents, which are people with specific needs mainly old and disabled people. In average 135 people lives in the house.

Before the renovation project the energy consumption was as high as 10 TJ/year as the building had never been thermo-modernised since constructed in the 70ties. This meant that around 763 tons CO₂ was emitted to the atmosphere every year. The project included a thorough renovation of the whole building envelope including insulation of external walls and roofs and exchange of windows and doors along with modernization of central heating installations and ventilation system, which have resulted in a decrease in the heating demand with more than 60%. Furthermore the grant allowed the institution to replace the 1 MW coal boiler with a 300 kW biomass boiler using pellets and 200 m² of vacuum solar heating panels Today the entire heating demand is covered by renewable energy and the CO_2 emission have thus been reduced by 100%.

The improved energy infrastructure have reduced the yearly cost of energy with around 60% and removed the environmental fee. Furthermore the automatisation of fuel input implies that the system can be served by only one janitor whereas there were five before. Finally the indoor climate with reduction of humidity and draught has resulted in improved well being and health of residents and staff.

The project was finalised in sep. 2009.

Address of project	Social Assistance House "Mors" ul. Morska 11 82-103 Stegna Poland
Contact Person	Mrs. Maria Pawlowska
Grant size	EEA: 532.692 EUR (National Environmental Protection Fund: 340.000 EUR)
Total budget	1.255.833 EUR
Implementation status	Completed
Heated area	14.627 m ³
CO ₂ -costs	38,4 €/tonnes CO ₂
CO2 reductions pr. year	763 tons
Energy savings pr. year	6354 GJ (62%)
Renewable energy production pr. year	Solar heating: 24369 kWh from 1. June to 30. Oct. 185 tons biomass pr. year (400 tons coal/year)



Project Name

Thermo-modernization of the public utilities objects in the municipality of Chmielno.

Background and relevance of the project

The Chmielno Municipality is located in the Kaszubski Nature Park near Gdansk and holds a population of 6647. An area, which in economic terms are dominated by tourism and agricultural activities. The municipality is hence focused on improving and preserving the natural environment. Air pollution appears as a great problem especially during wintertime where most of the often badly insulated buildings are heated by small and ineffective coal stoves or oil boilers. In 2005 the municipality decided to do an effort for improving the standard of its public buildings, which at that time were in a very bad condition. As for instance the schools suffered from a very bad indoor climate, where teaching took place in temperatures as low as 12° C during winter time. The municipality was forced to look for external support as either the municipal or regional budgets could afford such a project. Fortunately the local authority was informed about Norway grants and decided to submit an application.

The objective of the project was multiple. More energy efficient buildings would not only improve the indoor climate, reduce air pollution and decrease energy costs, but it was also seen as a way to improve the architectonic appearance of the municipal buildings and thereby increase the attractiveness of the area as a tourism locality.





Project and Grant

The exact scope of the project included energy renovation of four buildings; two schools in respectively the village of Miechucino and Chmielno, a public centre of culture, sport and recreation and the administrative office of the municipality. In all these case a complete renovation of the building envelope with new windows, doors and insulation have been carried out together with improvement of the heating system e.g. change of piping and radiators and installation of thermostatic valves. Today the heating systems of the schools are regulated according to outdoor temperatures and lower the temperature at night times, whereas there were no such regulation in the previous systems.

Moreover a biomass boiler on 250 kWh has replaced the inefficient oil boiler at the school in Miechucino. The fuel used for the biomass boiler is waste products such as saw dust and wood chips from the local sawmill. In average the energy consumption have decreased by 60% and at the same time the indoor temperature level have increased to a pleasant level allowing the pupils to concentrate on their subjects.

With regard to the environment the project have resulted in a reduction of air pollutants e.g. CO₂ emission has been reduced with 350 tons pr. year. The project received a grant of 395.914 EUR and the total budget of the project amounted to 773.535 EUR.





Address of project	83-333 Chmielno, 22 Gryfa Pomorskiego Street
Contact Person	Zygmunt Wenta
Email	ugwenta@wp.pl
Grant size	395.914 €
Total budget	773.535 € (eligible costs equals 671.240 €)
Implementation status	Finished in August 2008
Heated volume	28 m ³
Energy consumption	117 kWh/m ²
CO ₂ -costs	64 €/tonnes CO ₂
CO ₂ reductions pr. year	351 tonnes CO ₂
Energy savings pr. year	3,6 TJ
Renewable energy production pr. year	0 GJ



Project Name

Reuse of Solid Combustible Waste in Cement Rotary Kilns of AS Kunda Nordic Tsement (KNC)

Background of the project

The cement industry contributes about 5 % to the global man made CO₂ emissions. In Estonia, the cement production is heavily dependant on the combustion of oil shale. In addition, most waste in Estonia is still placed in landfills.

The EU-Commission decision, of May 4th 2007, concerning the national allocation plan for Estonia of Green-

house gas emission allowances reduces the permissible CO₂-emissions from KNC. The Estonian proposed GHGallowance for KNC was 1,3 mill tonnes/year in the period 2008-2012. According to the KNC environmental report the KNC-emissions in 2006 were 0,802 mill tonnes. Assuming at this stage that the EU-imposed reduction of 47,8 % in allowances is evenly distributed among the companies, this implies an allowable CO₂- emission for KNC of approximately 0,68 mill tonnes CO₂/year. Thus KNC needs either to reduce its annual CO2-emissions by 123 000 tonnes, each year 2008-2012. Assuming a future CO₂-price between 10 to 30 €/ton, the annual cost for KNC, based on the assumed 123000 tons/yr (or saving, in case of reducing the emissions), will be between 1,23 mill €/year and 3,69 mill €/year.





The project

The purpose of the Project is to improve the solid waste combustion scheme at AS Kunda Nordic Tsement, with the overall objective to protect the environment by reducing the amount of waste in landfills in Estonia and the use of oil shale in cement production. The project will help weaken the Estonian dependency on oil shale and strengthen the role of waste combustion in the Estonian energy sector. Its concrete purpose is to replace oil shale as a fuel with various waste fractions and to install a feeder system to increase the use of waste as a fuel in the process of cement and clinker production. Waste is reused in the co-processing leading to lower pressure on landfills and removal of organic waste, and thus reduced GHG emissions. Fossils fuels are replaced by waste leading to reduced GHG emissions.

The project target in terms of reduction of biodegradable waste to landfill is about 85 000 tonnes/year and the estimated CO_2 reduction and/or avoidance is about 71 445 tonnes CO_2 /year which gives the project the largest GHG reduction potential in the whole EEA and Norway Grant's project portfolio.





The total project budget has been reduced from 3.7 mill € to 2.1 mill € as a consequence of the financial crisis: the decreased building activities implied a decreased demand for cement which in turn entails a reduction of the production and thus a reduction of the investments at the plant. As a consequence, the project has been adjusted as a result of the changed marked situation and the project promoter decided to adapt the existing burners instead of buying new multichannel burners and to reduce the waste storage facilities.

Among the two cement kilns fitted with co-combustion technology for solid waste that were planned to be adapted, one has been adapted so far. In 2008, 38 857 tonnes of waste was co-processed and in 2009 so far, 21 400 tonnes. Most of the waste arrives by boat which allows avoiding CO₂ emissions from waste transportation by trucks. The full capacity of co-processing will be realised by the end of the project when the two burners will be modified.

The project has several revenue generating benefits as waste combustion saves both money and energy from other power sources (lower fuel cost). However there are two main uncertainties which are the energy price for purchase waste (versus oil shale price), as well as the impact of the emission trading scheme (plant's future CO₂ emissions quotas). Other uncertainties are also

Address of project	Jaama 2 EE-44106 Kunda Estonia
Contact Person	Mr Aadu Kana
Grant size	475,416€
Total budget	2.12 million €
Implementation status	Not completed
Reduction in amount of waste in landfills	By 2012 ca 85,000 tonnes of waste is reused per annum, equally waste disposal at landfills decreases (three kilns are in operation)
Reduction of the amount of oil shale used for the cement production	Use of the oil-shale for the cement production decreases ca 140,000 tonnes per annum by 2012
CO ₂ -costs	€/tonnes CO ₂
CO ₂ -reductions pr. year	5%
Energy savings pr. year	980 TJ



Appendix 2 Overview Database

Incl. Polish Review
SS Main Description
Country
Case Number
Title
Summary (copied from http://projects.cowiportal.com/ps/A005178/Documents/3%20Project%20docume nts/Data/EEA/List_projects_132.xls)
Sector 1. Public 2. Private
Intervention type(s) 1. EE Buildings 2. Heating systems 3. Fuel switch 4. Renewables 5. EE Industry 6. Waste 7. Environment (eg 1, 4)
Project duration (months)
Progress - evaluated on the basis of available documents (GDD=1, PIR=2, PCR=3)
Promoter
Promoter web
Contact person
Phone
<u>E-mail</u>
Responsibility (initials)
Date of review finalised (internal data registration finalised and file)
Application Form (available =1)
Appraisal reports (DARs)
Budget information (GDD (GRD))
Implementation plans (PIPs)
Project Interim reports (PIRs) specify number
Project completion report
Other data reviewed
Specific missing information
E-mail /request send out (date)
Data received in database and finalized
First reminder (date)
Second reminder (date)
Any telephone interview (date)
Planned Investment EUR (ELIGBLE COSTS)
Final Investment budget - if completion report is available (ELIGBLE COSTS)
Adjustment of investment scope
Discount rate % (fixed to 5%)
Lifetime year (20 or 30)
EEA/Norway Grant awarded EUR (from completion report or GDD)

Other Grants (EUR)
Grant level (grant/investment in %) Qualitative comments concerning additionality (e.g. indications concerning return
on investments)
Comments on deviation
Energy consumption GJ/year
GHG emissions tonne CO2 eq/year
Quality/evidence of baseline $1 = poor$
2 = medium
3 = good
Comments concerning baseline
Planned/achieved energy consumption GJ/year
Planned/achieved GHG emissions ton CO2 eq/year
1 = poor
2 = medium
S - 9000
Versily DEC energy production (C1)
Freery serving (1/veer
Target CHC reductions toppe CO2 og/war
Certainty about achievement
Uncertainty about results - just started/major changes = 80%
Completed = 100%
Effectiveness ton Reduced CO2 eq.
Other effects/impacts
(1= not/insignificant, 2=important part, 3=fundamental to the project)
SD Economic(1= not/insignificant, 2=important part, 3=fundamental to the pro- iect)
SD Social (1= not/insignificant, 2=important part, 3=fundamental to the project)
Good governance (1= not/insignificant, 2=important part, 3=fundamental to the
project) Gender equality (1= not/insignificant 2=important part 3=fundamental to the
project)
Comments/assessment of quantification of impacts
Project quality
Quality of documents
Other issues/comments
CO2-reduction (abs) pr. saved GJ (abs)
CO2-reduction (rel) pr. saved GJ (rel)

Appendix 3 Questionnaires and reminders

List of questions to the project promoter

Did you apply for other grants?
Did you apply for other grants? YES/NO/NA
Has the project been implemented and now in operation?
Has the project been implemented and now in operation? YES/NO/NA
Were there any major deviations from the project design in the implementa- tion
Were there any major deviations from the project design in the implementa- tion YES/NO/NA
Were there any major deviations in investment figures compared to the project design?
Were there any major deviations in investment figures compared to the project design? YES/NO/NA
Did the project result in reduction of SO2?
Did the project result in reduction of SO2? YES/NO/NA
Did the project result in reduction of NOx?
Did the project result in reduction of NOx? YES/NO/NA
Did the project result in reduction of dust or particles (PM2,5, PM10)?
Did the project result in reduction of dust or particles (PM2,5, PM10)? YES/NO/NA
Has the project led to improved health conditions (e.g. reduced local pollu- tion)?
Has the project led to improved health conditions (e.g. reduced local pollu- tion)? YES/NO/NA
Has the project resulted in better: learning environment
Has the project resulted in better: learning environment YES/NO/NA
Has the project resulted in better: working environment
Has the project resulted in better: working environment YES/NO/NA

Has the project resulted in better: healthcare environment

Has the project resulted in better: healthcare environment YES/NO/NA

Did the project result in noise reduction?

Did the project result in noise reduction? YES/NO/NA

How many temporary jobs were created during the project implementation?

How many temporary jobs were created during the project implementation? NUMBER/NA

How many permanent jobs were created/will be created as a result of the project?

How many permanent jobs were created/will be created as a result of the project? NUMBER/NA

How many people are expected to experience improved learning environment?

How many people are expected to experience improved learning environment? NUMBER/NA

How many people are expected to experience improved working environment?

How many people are expected to experience improved working environment? NUMBER/NA

How many people are expected to experience improved healthcare environment?

How many people are expected to experience improved healthcare environment? NUMBER/NA

How many people are expected to experience improved living environment?

How many people are expected to experience improved living environment? NUMBER/NA

How many people have received training as a result of the project?

How many people have received training as a result of the project?

How many people have been given information as a result of the project?

How many people have been given information as a result of the project? NUMBER/NA

On a scale of 1-7, where 7 is the best, what is your experience with the FMO's administration of the Grant?

On a scale of 1-7, with 7 as the best, what is your experience with the FP's administration of the Grant?

On a scale of 1-7, with 7 as highest level, would you agree that the project results have been attained as planned?

Questionnaire

Dear [Name from database]

Re.: [Project title from database]

We are contacting you with this email because your organisation/company has been awarded a grant from EEA and Norway Grants for environmentally friendly projects. The EEA and Norway Grants were established in conjunction with the enlargement of the European Union in 2004. The grant schemes support energy efficiency and renewable energy cutting emissions of CO_2 .

The Financial Mechanism Office (FMO) under the EEA and Norway Grants has requested the consultant COWI A/S to make a review of projects that have received the grants during the period 2004 to 2009. The objective of the review is to sum up experience and lessons learned as input for the preparation of new programmes. The focus of the review is on reductions in energy consumption and GHG emissions resulting from the projects, but the review will also identify other impacts of the project and the support from EEA and Norway Grants.

COWI A/S has reviewed available project management documents (application, appraisal, grant recommendation and decision, core indicators, implementation, interim and completion reports) from the FMO. Based on these documents, we have recorded the investment figures as well as planned and achieved reductions in energy consumption and GHG emissions.

To avoid misunderstandings in reading the documents, we would kindly ask you to confirm the recorded data as presented below or fill in the data when missing, and correct the data if necessary, and return the information to us.

	Recorded data	Your cor- rections	n/a	Comment
Investment & Financing				
Final Eligible Investment (EUR)				
EEA/Norway Grant awarded(EUR)				
Other external grants (EUR)				
Baseline				
Energy consumption before project GJ/year				
GHG emissions before project tonne CO2 eq/year				
Target				
Energy consumption after im- plementation GJ/year				
GHG emissions when project is				

	Recorded data	Your cor- rections	n/a	Comment
implemented tonne CO2 eq/year				
Renewable energy				
RES capacity installed (kW)				
Yearly RES energy production (GJ)				

General questions:

	No	Yes	n/a	Comment if yes
Did you apply for other grants?				[name of funding scheme]
Has the project been imple- mented and now in opera- tion? If positive please pro- vide your observations on performance.				[date and recorded energy con- sumption/production per year]
Were there any major devia- tions from the project design in the implementation				
Were there any major devia- tions in investment figures compared to the project de- sign? If so, please indicate the deviation in percentage of the total eligible cost.				
Pollutants				
Did the project result in re- duction of SO2? Please quantify tonne per year				
Did the project result in re- duction of NOx? Please quantify tonne per year				
Did the project result in re- duction of dust or particles (PM2,5, PM10)? Please quantify tonne per year				
Additional benefits achieved				
Has the project led to im- proved health conditions (e.g. reduced local pollution)?				
Has the project resulted in better conditions, as follows:				
learning environment im- proved				
working environment im-				

	No	Yes	n/a	Comment if yes
proved				
healthcare environment im- proved				
Did the project result in noise reduction?				
How many temporary jobs were created during the pro- ject implementation?				
How many permanent jobs were created/will be created as a result of the project?				
How many people are expected to experience improved:				
Learning environment?				
Working environment?				
Healthcare environment?				
Living environment?				
How many people have re- ceived training as a result of the project?				
How many people have been given information as a result of the project?				
Procedures and results				
On a scale of 1-7, where 7 is the best, what is your experi- ence with the FMO's admini- stration of the Grant?				
On a scale of 1-7, with 7 as the best, what is your experi- ence with the FP's admini- stration of the Grant?				
On a scale of 1-7, with 7 as highest level, would you agree that the project results have been attained as planned?				

We would kindly ask you to return the completed form within a week. Please be informed that we will also allow ourselves to send reminders in case we don't receive your reply. Thank you in advance for your cooperation.

Please do not hesitate to contact us if you have any questions. The contact person is:

Niels Bisgaard Pedersen, COWI A/S Tlf: +45 45 97 22 49 e-mail: <u>nbp@cowi.dk</u>

or

Jakob Rud +45 45 97 26 83 e-mail: jaru@cowi.dk

Thank you in advance for your co-operation.

Best regards

Niels Bisgaard Pedersen COWI A/S Parallelvej 2 2800 Kongens Lyngby Denmark

Reminder mail to promoters GHG

Reminder

Dear [Name from database]

Re.: [Project title from database]

Please allow us to remind you about our previous mail with a questionnaire concerning the grant from EEA and Norway Grants you has been awarded.

As mentioned in the previous mail we are contacting you because your organisation/company has been awarded a grant from EEA and Norway Grants for environmentally friendly projects. The EEA and Norway Grants were established in conjunction with the enlargement of the European Union in 2004. The grant schemes support energy efficiency and renewable energy cutting emissions of CO_2 .

The Financial Mechanism Office (FMO) under the EEA and Norway Grants has requested the consultant COWI A/S to make a review of projects that have received the grants during the period 2004 to 2009. The objective of the review is to sum up experience and lessons learned as input for the preparation of new programmes. The focus of the review is on reductions in energy consumption and GHG emissions resulting from the projects, but the review will also identify other impacts of the project and the support from EEA and Norway Grants.

COWI A/S has reviewed available project management documents (application, appraisal, grant recommendation and decision, core indicators, implementation, interim and completion reports) from the FMO. Based on these documents, we have recorded the investment figures as well as planned and achieved reductions in energy consumption and GHG emissions.

To avoid misunderstandings in reading the documents, we would kindly ask you to confirm the recorded data as presented in the attached word-document or fill in the data when missing, and correct the data if necessary, and return the information to us.

	Recorded data	Your cor- rections	n/a	Comment
Investment & Financing				
Final Eligible Investment (EUR)				
EEA/Norway Grant awarded(EUR)				
Other external grants (EUR)				
Baseline				
Energy consumption before project GJ/year				

	Recorded data	Your cor- rections	n/a	Comment
GHG emissions before project tonne CO2 eq/year				
Target				
Energy consumption after im- plementation GJ/year				
GHG emissions when project is implemented tonne CO2 eq/year				
Renewable energy				
RES capacity installed (kW)				
Yearly RES energy production (GJ)				

General questions:

	No	Yes	n/a	Comment if yes
Did you apply for other grants?				[name of funding scheme]
Has the project been imple- mented and now in opera- tion? If positive please pro- vide your observations on performance.				[date and recorded energy con- sumption/production per year]
Were there any major devia- tions from the project design in the implementation				
Were there any major devia- tions in investment figures compared to the project de- sign? If so, please indicate the deviation in percentage of the total eligible cost.				
Pollutants				
Did the project result in re- duction of SO2? Please quantify tonne per year				
Did the project result in re- duction of NOx? Please quantify tonne per year				
Did the project result in re- duction of dust or particles (PM2,5, PM10)? Please quantify tonne per year				
Additional benefits achieved				
Has the project led to im- proved health conditions (e.g. reduced local pollution)?				
Has the project resulted in				
	No	Yes	n/a	Comment if yes
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better conditions, as follows:				
learning environment im- proved				
working environment im- proved				
healthcare environment im- proved				
Did the project result in noise reduction?				
How many temporary jobs were created during the pro- ject implementation?				
How many permanent jobs were created/will be created as a result of the project?				
How many people are ex- pected to experience im- proved:				
Learning environment?				
Working environment?				
Healthcare environment?				
Living environment?				
How many people have re- ceived training as a result of the project?				
How many people have been given information as a result of the project?				
Procedures and results				
On a scale of 1-7, where 7 is the best, what is your experi- ence with the FMO's admini- stration of the Grant?				
On a scale of 1-7, with 7 as the best, what is your experi- ence with the FP's admini- stration of the Grant?				
On a scale of 1-7, with 7 as highest level, would you agree that the project results have been attained as planned?				

We would kindly ask you to return the completed form asap. It is very important for the validity of the results of the survey that many project promoter reply to the questionnaire.

Please be informed that we will also allow ourselves to send one more reminder in case we don't receive your reply. Thank you in advance for your cooperation.

Please do not hesitate to contact us if you have any questions. The contact person is:

Niels Bisgaard Pedersen, COWI A/S Tlf: +45 45 97 22 49 e-mail: <u>nbp@cowi.dk</u>

or

Jakob Rud +45 45 97 26 83 e-mail: jaru@cowi.dk

Thank you in advance for your co-operation.

Best regards

Niels Bisgaard Pedersen COWI A/S Parallelvej 2 2800 Kongens Lyngby Denmark

2. reminder mail to promoters GHG

Reminder Dear [Name from database]

Re.: [Project title from database] Please allow us to remind you about our previous mail y

Please allow us to remind you about our previous mail with a questionnaire concerning the grant from EEA and Norway Grants you has been awarded.

As mentioned in the previous mail we are contacting you because your organisation/company has been awarded a grant from EEA and Norway Grants for environmentally friendly projects. The EEA and Norway Grants were established in conjunction with the enlargement of the European Union in 2004. The grant schemes support energy efficiency and renewable energy cutting emissions of CO₂.

The Financial Mechanism Office (FMO) under the EEA and Norway Grants has requested the consultant COWI A/S to make a review of projects that have received the grants during the period 2004 to 2009. The objective of the review is to sum up experience and lessons learned as input for the preparation of new programmes. The focus of the review is on reductions in energy consumption and GHG emissions resulting from the projects, but the review will also identify other impacts of the project and the support from EEA and Norway Grants.

COWI A/S has reviewed available project management documents (application, appraisal, grant recommendation and decision, core indicators, implementation, interim and completion reports) from the FMO. Based on these documents, we have recorded the investment figures as well as planned and achieved reductions in energy consumption and GHG emissions.

To avoid misunderstandings in reading the documents, we would kindly ask you to confirm the recorded data as presented in the attached word-document or fill in the data when missing, and correct the data if necessary, and return the information to us.

	Recorded data	Your cor- rections	n/a	Comment
Investment & Financing				
Final Eligible Investment (EUR)				
EEA/Norway Grant awarded(EUR)				
Other external grants (EUR)				
Baseline				
Energy consumption before project GJ/year				

	Recorded data	Your cor- rections	n/a	Comment
GHG emissions before project tonne CO2 eq/year				
Target				
Energy consumption after im- plementation GJ/year				
GHG emissions when project is implemented tonne CO2 eq/year				
Renewable energy				
RES capacity installed (kW)				
Yearly RES energy production (GJ)				

General questions:

	No	Yes	n/a	Comment if yes
Did you apply for other grants?				[name of funding scheme]
Has the project been imple- mented and now in opera- tion? If positive please pro- vide your observations on performance.				[date and recorded energy con- sumption/production per year]
Were there any major devia- tions from the project design in the implementation				
Were there any major devia- tions in investment figures compared to the project de- sign? If so, please indicate the deviation in percentage of the total eligible cost.				
Pollutants				
Did the project result in re- duction of SO2? Please quantify tonne per year				
Did the project result in re- duction of NOx? Please quantify tonne per year				
Did the project result in re- duction of dust or particles (PM2,5, PM10)? Please quantify tonne per year				
Additional benefits achieved				
Has the project led to im- proved health conditions (e.g. reduced local pollution)?				
Has the project resulted in				

	No	Yes	n/a	Comment if yes
better conditions, as follows:				
learning environment im- proved				
working environment im- proved				
healthcare environment im- proved				
Did the project result in noise reduction?				
How many temporary jobs were created during the pro- ject implementation?				
How many permanent jobs were created/will be created as a result of the project?				
How many people are ex- pected to experience im- proved:				
Learning environment?				
Working environment?				
Healthcare environment?				
Living environment?				
How many people have re- ceived training as a result of the project?				
How many people have been given information as a result of the project?				
Procedures and results				
On a scale of 1-7, where 7 is the best, what is your experi- ence with the FMO's admini- stration of the Grant?				
On a scale of 1-7, with 7 as the best, what is your experi- ence with the FP's admini- stration of the Grant?				
On a scale of 1-7, with 7 as highest level, would you agree that the project results have been attained as planned?				

We would kindly ask you to return the completed form not later than Friday 30 October 2009. It is very important for the validity of the results of the survey that many project promoter reply to the questionnaire.

Please do not hesitate to contact us if you have any questions. The contact person is:

Niels Bisgaard Pedersen, COWI A/S Tlf: +45 45 97 22 49 e-mail: <u>nbp@cowi.dk</u>

or

Jakob Rud +45 45 97 26 83 e-mail: jaru@cowi.dk

Thank you in advance for your co-operation.

Best regards

Niels Bisgaard Pedersen COWI A/S Parallelvej 2 2800 Kongens Lyngby Denmark

Appendix 4 Project Portfolio EEA and Norway Grants

Case number and title for infrastructure projects

Case Number	Title
BG0015	Veliko Turnovo - Modernisation and reconstruction of nurseries
BG0018	Rousse - Modernisation of a psychiatric institution
BG0040	Gotse Delchev - Improving the energy efficiency of the Ivan Skenderov Hospital
BG101740054	Solarpark "Pripechene"
	North East Bulgaria Wind Project
CY0014	Salamiou village - old school building restoration
CY0015	National - Zero CO2 emission power generation prototype
CZ0075	Ostrava - Modernisation of the hippo pavilion
CZ0078	Havirov - Reconstruction and modernisation of elementary school Fry- decka
CZ0093	Strelske Hostice - renovation and enlargement of school
CZ0126	Central Bohemia - IEC Harfa Educational Centre
CZ0129	City of Plzen – Modernisation of public kindergartens
CZ0147	Ceské Velenice - renovation of kindergarten
CZ0151	Mesto Kravare - renovation of elementary school
CZ0172	Karvina - Renovation of Children's Creche
EE0012	National - Research on soil-based emissions of greenhouse gases
EE0019	Kunda - Combustion of waste in cement production
EE0034	Estonia - Improving industrial recycling of batteries
EE0039	Sillamäe - modernisation of heating network
EE0040	Lihula Soojus - Modernisation of heating facilities
EL0026	Agathonissi - desalination of water
EL0031	Crete - Organic waste treatment and compost production.
EL0034	Argyroupolis - Installation of photovoltaic units.
EL0051	Fourni - Wind-powered water desalination unit
HU0028	Morahalom renewable energy model project
HU0030	Soltvadkert wastewater sludge treatment facility
HU0038	Szentendre - Renovation of Regional Environmental Centre
HU0039	Hernad - renovations for energy efficient school
HU0048	Vác Renovation of the Göncöl House
HU0052	Baranya County - Renovation of the Arboretum of Puspokszentlaszlo
HU0053	Kecskemet - establishment of a biogas energy plant and research centre
HU0084	Heves - Energy efficiency at the Matra Therapeutic Institute
HU0102	Ersekcsanad - energy efficiency in public buildings
HU0108	Újszilvás - modernisation of heat system

Case Number	Title
HU0111	Szentes - thermo-modernisation of municipal buildings
HU0112	Budapest - renewable energy sources at Bethesda Hospital
HU0113	Szolnok - Construction of biogas fermentor
HU0117	Budapest - Renovation of the Catholic University Grammar school build- ing
HU0119	Ibrány - providing a school with renewable energy
HU0127	Vacratot - renewable energy
HU0132	Zirc - renewable energy
LV0049	Karsava - Local biomass fuel production
LV0051	North Vidzeme - Environmental education and information centre
LV0053	Riga - Biofuel cogeneration plant ¹²
LV0062	Limbaži - earth heat demonstration project
LV0073	National - Increased waste capacity.
LV0075	Salacgriva - Sea heat pumps.
LV0097	Riga - Geothermal energy demonstration project
MT0011	Xrobb L-Ghagin nature park and sustainable development centre.
PL0109	Przasnysz municipality - Replacement of coal fuelled heat boilers
PL0110	Czluchów - Thermo modernisation of a primary school and a municipal kindergarten
PL0111	Kolobrzeg - Thermo modernisation of public utility complexes
PL0112	Tarnow - Thermo modernisation of Specialist Hospital
PL0114	Góra -Thermo modernisation of School Complex Facilities
PL0115	Prudnik – thermal insulation of schools
PL0120	Glubczyce - thermo modernisation of school
PL0121	Bartoszyce District - Modernisation of heating management
PL0122	Dzialdowo - Thermo modernisation of an elementary school
PL0124	Lódz - thermo modernisation of the Lódz Technical University
PL0125	Przemysl – thermo-modernisation of educational facilities
PL0126	Szprotawa – thermo modernisation of school and education centre
PL0127	Konskowola - thermo modernising of public buildings
PL0128	Zakopane - Thermo-modernisation of schools
PL0129	Wadroze Wielkie - thermo modernisation of public buildings
PL0131	Sosnowiec - thermo modernisation of hospital
PL0136	Radzilów - Thermal insulation of public utility buildings
PL0137	Orzysz - construction and modernisation of heating systems
PL0138	Zabludów - Thermo modernisation of public utility buildings

 12 The grant agreement has been terminated in the beginning of 2010 after the end of the review

Case Number	Title
PL0139	Krzeszyce - thermo-modernisation of the commune school
PL0140	Smetowo Graniczne - Thermo modernisation of an educational complex
PL0142	Pakosc - Thermo modernisation of a Middle school
PL0143	Torun - Thermo modernisation of educational buildings
PL0144	Ozarów - modernisation of boiler room
PL0145	Gdansk - Small hydropower plant in Michalowo
PL0146	Gdynia - Thermal insulation of educational institutions
PL0147	Kamienna Gora - thermo modernisation of public buildings
PL0148	Kielce - thermo modernisation of the Remand Centre
PL0149	Dzierzgon - Improvement of energy conservation in public service entities
PL0150	Konstantynów Lódzki - Thermo-modernisation of public buildings
PL0151	Wejherowo - Thermal modernisation of buildings of the Educational Centre No.2 for the Deaf
PL0153	Sedziszów - modernisation of heating network
PL0155	Busko district - thermo modernisation of educational institutions
PL0156	Swidwin - Thermo modernisation of public utility buildings
PL0158	Wierzbica – thermo modernisation of public utility buildings
PL0160	Brody – thermo modernisation of public buildings
PL0161	Ustrzyki Dolne – thermal efficiency improvement
PL0163	Przeworsk - Modernisation of the heating system
PL0166	Brzesc Kujawski - Thermal modernisation of the building of the Primary School No. 1 and Public Kindergarten No. 1
PL0167	Walim - thermo modernisation of group of school buildings
PL0172	Barcin – Thermo-modernisation of public buildings
PL0173	Bartoszyce – Thermo-modernisation of educational facilities
PL0174	Jarocin - Thermomodernisation of public premises
PL0175	Czersk – Thermo-modernisation of public buildings
PL0176	Olsztynek – Thermo-modernisation of the Voivodeship Rehabilitative Hospital for Children in Ameryka
PL0177	Kolno – Thermo-modernisation of public utility buildings
PL0178	Luban - Thermo modernisation of public premises
PL0179	Wagrowiec – Thermo-modernisation of municipal public buildings
PL0180	Golancz – Thermo-modernisation of municipal buildings
PL0181	Lubaczów - Thermo-modernisation of public buildings
PL0182	Skarzysko - Kamienna - Thermo-modernisation of Public Buildings
PL0183	Wabrzezno – Thermo-modernisation of public utility buildings
PL0184	Radom - Thermo-modernisation of public premises
PL0185	Stegna - Thermo-modernisation of Social Assistance House

Case Number	Title
PL0186	Bytów – Thermo-modernisation of public buildings
PL0187	Nowa Ruda - Thermo-modernisation of public utility buildings
PL0188	Darlowo – Thermo-modernisation of public buildings
PL0189	Dzierzoniów District - Thermo-modernisation of public utility buildings
PL0190	Slupca – Thermo-modernisation of public facilities
PL0191	Jaslo - Thermo-modernisation of public premises
PL0192	Walbrzych - Thermo-modernisation of public premises
PL0193	Nowy Dwór Gdanski – Thermo-modernisation of public utility buildings
PL0194	Chmielno – Thermo-modernisation of public utility buildings
PL0195	Nowosolski Poviat - Thermo modernisation of public premises
PL0196	Kolbuszowa - Thermo modernisation of public premises
PL0197	Opatów Powiat - Thermo modernisation of public premises
PL0198	Namyslów Powiat – Thermo modernisation of public premises
PL0202	Ropczycko-Sedziszowski District - Thermo Modernisation of Public Prem- ises
PL0203	Mecinka - Thermo Modernisation of Public Premises
PL0204	Gardeja – Thermo-modernisation of public utility buildings
PL0206	Nowa Sarzyna - Thermo Modernisation of Public Premises
PL0207	Opole Lubelskie - Thermo Modernisation of Public Premises
PL0208	Slawno – Thermo-modernisation of public buildings
PL0295	Ozarów - Thermo Modernisation of Public Premises
PL0320	Ustrzyki Dolne - Installation of modern heat boilers
PL0321	Sosnowiec - Installation of modern heat boilers.
PL0331	Olecko - Establishment of a manual waste sorting line with connected equipment.
PL0332	Krakow - Collection Points for Waste Storage
PL0333	Zabno - Central sorting facility for municipal waste
PL0334	Wielka Nieszawka - Installation of solar collectors and heat pumps
PL0336	National - Extension of a collection system for used car/lead batteries.
PL0337	Bieszczady and Lower Beskidy Mountains - Installation of solar collectors, heat pumps and a hybrid power station
PL0339	Radom - Extension of heat distribution network
PL0341	Wojnowo - Construction of bio gas plant in agricultural farm
PL0347	Dzierzgon Commune - Installation of solar collectors for water heating
PL0396	Legnica - Thermomodernisation of public building facilities
PL0414	Elblag - Thermo-modernisation of public education facilities
PL0417	Recz - Thermomodernisation of Elementary School and Municipal Kin- dergarten buildings
RO0054	Galati - Development of decentralised energy systems.

Case Number	Title
SK0029	Vráble - biomass for heat production
SK0030	Tvrdošín - public lighting enhancement
SK0045	Snina – Modernisation and renovation of refuge home
SK0049	Svit - public lighting enhancement
SK0050	Poprad - Residential care home for older persons
SK0061	Tatranska Javorina - alpine biology research institute
SK0080	Zeliezovce - installation of renewable energy in a state prison
SK0083	Nitra - thermo-insulation and introduction of renewable energy in public buildings
SK0098	Kosice - Improved waste management system
SK0099	Rohožník - Installation of biomass boiler.
SK0137	Handlová - Energy savings through renovation of public swimming pool
SK0138	Kosice - renewable energy in schools
SI0015	Gornja Radgona - Thermo modernisation of Manko Golar Kindergarten
ES0013	A Coruña - Promotion of renewable energies

Case number and title for soft projects

938418837	Romanian small communities, schools and NGOs, promote climate friendly solutions
RO9113623	Romanian Atmospheric research 3D Observatory
5798567	Reduction of greenhouse gas emissions et al.
16561182	Manual advance offset scheduling
983418837	Sustainable energy use through educational, public and policy awareness raising
BG106617123	Phoenix Biogas Plant - PBP
BG123024538	Assessment reduction and prevention of air, water and soil pollution in Stara Zagora region
BG101740054	Solarpark "Pripechene"
971032146	Energy Efficiency and Renewable Energy for Reduction of Greenhouse Gases in Public Sector in the Black Sea Region
	Holistic approach to the reduction of greenhouse gas emissions in Bul- garia
	Demonstration project on improvement of the street lightening in Topolov- grad Municipality
PL0271	Gdansk - Innovative Solutions for Wastewater Management

Appendix 5 List of project references for comparison

Title	Country	Туре	CO ₂ reduction [ktCO2/year]
Sreden Iskar Cascade HPP Portfolio Project	Bulgaria	Hydro	74
Nitrous Oxide Emission Reductions at Lovochemie	Czech Republic	N2O	595
BTG Biomass Energy Portfolio CZ - All 14 subprojects	Czech Republic	Biomass energy	104
Thermal oxidation of the gas effluents of the Trifluoroacetic Acid generating station at the Salindres factory (Gard)	France	HFCs	357
Réduction additionnelle des émissions de N2O dans les effluents gazeux provenant de l'installation de production d'Acide Adipique de l'usine de Chalampé (Haut-Rhin)	France	N2O	2139
Methane Capture, Power and Heat Generation from Coal Mine Gas in the Concession HER-TEUTO	Germany	Coal bed/mine methane	72
Methane Capture, Power and Heat Generation from Coal Mine Gas in the Concession HER-Wan-Thal	Germany	Coal bed/mine methane	87
Redundant thermal decomposition of residual nitrous oxide (N2O) from the LANXESS adipic acid production in Krefeld-Uerdingen	Germany	N2O	858
Redundant catalytic decomposition of residual nitrous oxide (N2O) from the BASF adipic acid plant in Ludwigshafen	Germany	N2O	2266
Catalytic reduction of N2O inside the Ammonia Burners of the BASF Nitric Acid Plant in Ludwigshafen	Germany	N2O	289
Biomass Retrofit at AES Borsod Power Plant	Hungary	Biomass energy	142
Biomass Retrofit at Bakonyi Power Plant	Hungary	Biomass energy	98
Pannonpower Gas and Biomass Cogeneration Project	Hungary	Biomass energy	239
Exim-Invest Biogas	Hungary	Landfill gas	26
Pálhalma Biogas Project	Hungary	Biogas	37
South Nyírség Bioenergy Project	Hungary	Biomass energy	101
N2O emission reduction project at Nitrogénművek Rt.	Hungary	N2O	800
Debrecen landfill gas mitigation project	Hungary	Landfill gas	83
Rudaiciai Wind Power-Plant Project	Lithuania	Wind	46
Benaiciai Wind Power Project	Lithuania	Wind	26
Sudenai and Lendimai Wind Power Joint Implementation Project	Lithuania	Wind	18

Title	Country	Туре	CO ₂ reduction [ktCO2/year]
Nitrous Oxide Emission Reduction Project at GP Nitric Acid Aggregate in AB Achema Fertiliser Plant	Lithuania	N2O	564
Te Apiti Wind Farm	New Zealand	Wind	106
Project white hill	New Zealand	Wind	128
Tararua Wind Farm Stage II	New Zealand	Wind	46
Tararua Wind Farm Stage III	New Zealand	Wind	194
Palmerston North Awapuni LFG to Energy Project Awapuni LFG to Energy Project	New Zealand	Landfill gas	30
Burwood Landfill Gas Utilisation Project	New Zealand	Landfill gas	40
Sawdust 2000	Romania	Biomass energy	53
Timisoara Combined Heat and Power Rehabilitation for CET Sud Location	Romania	EE supply side	35
Switch from wet-to-dry process at Podilsky Cement	Ukraine	EE Industry	756
"Utilization of Coal Mine Methane at the Coal Mine named after A.F. Zasyadko".	Ukraine	Coal bed/mine methane	1178
CMM utilisation on the Joint Stock Company named Komsomolets Donbassa Coal Mine of DTEK (Donbasskaya Toplivnaya Energeticheskaya Kompanya)	Ukraine	Coal bed/mine methane	317
Revamping and Modernization of the Alchevsk Steel Mill	Ukraine	EE industry	906
Rehabilitation of the district heating system of Crimea C47	Ukraine	Energy distribution	116
Rehabilitation of the District Heating System in Donetsk Region (was first sumbtited as the track 2 project with ref=7)	Ukraine	Energy distribution	172
Rehabilitation of the District Heating System in Kharkiv City (was first sumbtited as the track 2 project with ref=150)	Ukraine	Energy distribution	200
Displacement of electricity generation with fossil fuels in the electricity grid by an electricity generation project with introduction of Steel Mill Waste Gas Firing Turbine power generation system (was first sumbtited as the track 2 project with ref=65)	Ukraine	EE own generation	1698
Utilization of Coal Mine Methane at the Coal Mine Sukhodilska-Skhidna	Ukraine	Coal bed/mine methane	62

Title	Country	Туре	CO ₂ reduction [ktCO2/year]					
District Heating System Rehabilitation of Chernigiv Region	Ukraine	Energy distribution	66					
Soft loans for building modernization	Germany	EE building	1800.0					
Labelling of domestic appliances - improvement of the energy efficiency of electrical appliances	Netherland (Holland)	EE	300.0					
Eco-driving - energy efficient purchasing- and driving behaviour	Netherland (Holland)	150.0						
Voluntary agreement on energy efficiency	Denmark	EE	800.0					
Oil from the soil: The seeds from renewable energy from Ireland	Ireland	Biooil	1.0					
Green light for solar therman use in the Beskydy mountains, Czech Republic	Czech	Solar	0.1					
Wood chip and straw boiler installation in Sal'a, Slovakia	Slovakia	Biomass	4.2					
PELP (Poland efficient light project)	Poland	EE	200.0					
Sugar Plants	Bulgaria	?	13.27					
Tamrash Hydro Power Plant	Bulgaria	Hydro	11.37					
Treshtena Hydro Power Plant	Bulgaria	Hydro	1.44					
Daisy Technology Geothermal	Bulgaria	Geothermal	0.16					
Lesitchevo Hydro Power Plant	Bulgaria	Hydro	8.48					
TAS Hydro Power Plant	Bulgaria	Hydro	1.99					
Electrostart Energy Efficiency	Bulgaria	EE	0.16					
Katunci Hydro Power Plant	Bulgaria	Hydro	10.00					
Wiwa Agrotex Biomass Combustion Plant	Bulgaria	Biomass	11.10					
Eliaz Energy Efficiency	Bulgaria	EE	1.92					
Metalagro Energy Efficiency	Bulgaria	EE	0.32					
Skladova Technika Energy Efficiency	Bulgaria	EE	2.25					
Biovet Cogeneration	Bulgaria	CHP	59.70					
Erato Biomass	Bulgaria	Biomass	1.02					
Sity-D Wind Power Plant	Bulgaria	Wind	0.73					
Nik Building Wind Power Plant	Bulgaria	Wind	0.76					
Delectra-Hydro AS	Bulgaria	Hydro	4.35					
Pirin Plast Energy Efficiency	Bulgaria	EE	1.72					
Skladova Technika Energy Efficiency	Bulgaria	EE	0.22					
Argos Wind Power Plant	Bulgaria	Wind	3.08					
Loziata Hydro Power Plant	Bulgaria	Hydro	26.52					
Zebra Energy Efficiency Project	Bulgaria	EE	5.29					
SL. Lachi Energy Efficiency	Bulgaria	EE	1.75					

Title	Country	Туре	CO ₂ reduction [ktCO2/year]					
ZMM Stomana Energy Efficiency	Bulgaria	EE	0.87					
Maritsa Energy Efficiency	Bulgaria	EE	0.46					
Effect 3 Geothermal	Bulgaria	Geothermal	0.22					
Oranjerii Djulunica Energy Efficiency	Bulgaria	EE	2.76					
Berg Montana Fittings Energy Efficiency	Bulgaria	EE	1.40					
Byala Mesta Hudro Power Plant	Bulgaria	Hydro	2.99					
Cherna Mesta Hydro Power Plant	Bulgaria	Hydro	3.13					
Vita 02 Biomass	Bulgaria	Biomass	0.13					
Energy Company Prometheus Biomass	Bulgaria	Biomass	0.68					
Gama Commerce Energy Efficiency	Bulgaria	EE	0.07					
Hranitelni Stoki Geothermal	Bulgaria	Geothermal	0.03					
Eton Geothermal Pumps	Bulgaria	Geothermal	0.48					
BNV Energy Efficiency	Bulgaria	EE	0.22					
Neochim Cogeneration	Bulgaria	CHP	24.56					
Skladova Technika Energy Efficiency 3	Bulgaria	EE	0.78					
Ceramengineering Energy Efficiency	Bulgaria	EE	1.68					
Sunny Travel Club Solar Collectors	Bulgaria	Solar	0.10					
Lomsko Pivo Energy Efficiency	Bulgaria	EE	0.95					
ITD Energy Efficiency	Bulgaria	EE	2.43					
Bul Eco Energia Biomass	Bulgaria	Biomass	2.66					
Wind Energie Varna Wind Power Plant	Bulgaria	Wind	1.35					
Khan Asparuh Energy Efficiency	Bulgaria	EE	10.27					
ST Degretz Wind Power Plant	Bulgaria	Wind	0.78					
Evklips - N. Rashev Wind Power Plant	Bulgaria	Wind	1.37					
Yoana Wind Power Plant	Bulgaria	Wind	1.84					
Nachevi-90 Wind Power Plant	Bulgaria	Wind	1.85					
Rubicon Shipping Wind Power Plant	Bulgaria	Wind	1.85					
Bulgaria-K Energy Efficiency	Bulgaria	EE	1.74					
Nora Cogeneration	Bulgaria	CHP	2.00					
SEK Hydro Power Plant	Bulgaria	Hydro	1.56					
Orgachim Geothermal	Bulgaria	Geothermal	0.28					
Paper Factory Iskar Energy Efficiency	Bulgaria	EE	0.09					
Sofia Auto Energy Efficiency	Bulgaria	EE	0.89					
Berg Montana Fittings Energy Efficiency 2	Bulgaria	EE	1.47					
Inertstroi-Kaleto Hydro Power Plant	Bulgaria	Hydro	15.00					
RDS Hydro Power Plant	Bulgaria	Hydro	1.71					

Title	Country	Туре	CO ₂ reduction [ktCO2/year]					
Wind Energie Varna Wind Power Plant 2	Bulgaria	Wind	0.68					
VEZ Svoghe Hydro Power Plant	Bulgaria	Hydro	17.67					
Dio Biomass	Bulgaria	Biomass	0.84					
ZMM Stomana Energy Efficiency 2	Bulgaria	EE	2.16					
KID 2226 Hydro Power Plant	Bulgaria	Hydro	4.28					
Comves Hydro Power Plant	Bulgaria	Hydro	1.32					
Rubella Beauty	Bulgaria	?	0.28					
Energy Invest Wind Power Plant	Bulgaria	Wind	3.06					
Hydroenergetika Hydro Power Plant	Bulgaria	Hydro	0.80					
Albena Solar Collectors	Bulgaria	Solar	0.22					
Transwagon Gasification	Bulgaria	Gasification	0.03					
Hemusmark Gasification	Bulgaria	Gasification	0.49					
Wind Energie Varna Wind Power Plant 3	Bulgaria	Wind	1.35					
ST Degrets Wind Power Plant 2	Bulgaria	Wind	0.84					
Enemona Energy Efficiency	Bulgaria	EE	0.70					
Alt Co Cogeneration Project	Bulgaria	CHP	9.55					
Topaz Mel Biogas	Bulgaria	Biogas	2.91					
Ahira Biomass	Bulgaria	Biomass	1.85					
Argos Wind Power Plant 2	Bulgaria	Wind	2.18					
Kunino Energy Hydro Power Plant	Bulgaria	Hydro	20.52					
Eco-Energy 2006 Wind Power Plant	Bulgaria	Wind	0.88					
Irna Co Geothermal	Bulgaria	Geothermal	0.06					
Hydroenergostroy Hydro Power Plant	Bulgaria	Hydro	17.60					
Welga Wind Power Plant	Bulgaria	Wind	3.58					
Khan Asparuh Energy Efficiency	Bulgaria	EE	5.45					
Bul Eco Energia Biomass	Bulgaria	Biomass	2.47					
MPS Stambolijski Biomass	Bulgaria	Biomass	82.44					
Ezerets Geothermal	Bulgaria	Geothermal	0.04					
Hydro Eco Group Hydro Power Plant	Bulgaria	Hydro	1.83					
Eco Farm Wind Power Plant	Bulgaria	Wind	4.28					
Ecoenergy BG Wind Power Plant	Bulgaria	Wind	2.34					
Euroethyl Biomass	Bulgaria	Biomass	23.34					
Erato Holding Biomass 2	Bulgaria	Biomass	1.09					
Dynamic Group Wind Power Plant	Bulgaria	Wind	2.32					
Troyan Energy Wind Power Plant	Bulgaria	Wind	5.29					
Orgachim Energy Efficiency	Bulgaria	EE	1.28					

Title	Country	Туре	CO ₂ reduction [ktCO2/year]					
Leiarmach Energy Efficiency	Bulgaria	EE	1.42					
Fanty-G Geothermal	Bulgaria	Geothermal	0.80					
Windsis Wind Power Plant	Bulgaria	Wind	2.78					
Nimex 2004 Wind Power Plant	Bulgaria	Wind	2.47					
Gamma Commerce	Bulgaria	?	0.14					
TPK Osokovo	Bulgaria	?	0.07					
Samokovo Tourist	Bulgaria	?	0.59					
Impuls Jsc.	Bulgaria	?	0.26					
CID Atlas	Bulgaria	?	1.79					
Dekotex	Bulgaria	?	3.37					
Aroma	Bulgaria	?	0.71					
Medica Sandanski	Bulgaria	?	1.33					
Bio Vet	Bulgaria	?	7.78					
Lukel Hydro Power Plant	Bulgaria	Hydro	9.42					
Bio Vet - 2	Bulgaria	?	9.89					
Sofiyska Voda	Bulgaria	?	14.50					
Bulyard Shipbuilding Industry	Bulgaria	?	1.90					
Logos Karvarna	Bulgaria	?	0.06					
Fazaeries AD - Silistra	Bulgaria	?	12.79					
Intersol - PV	Bulgaria	PV	0.76					
Granit	Bulgaria	?	0.31					
Bulyard - 2	Bulgaria	?	1.57					
Sredna Gora Jsc Stara Zagora	Bulgaria	?	0.40					
Badeshnost	Bulgaria	?	2.02					
Granit 97 Jsc 2	Bulgaria	?	0.38					
Vitavel	Bulgaria	?	0.08					
Energia	Bulgaria	?	5.36					
Impuls Jsc. 2	Bulgaria	?	0.18					
DID 90	Bulgaria	?	0.35					
RIC 1	Bulgaria	?	1.05					
Megastroj	Bulgaria	?	2.09					
Zaharni izdelia	Bulgaria	?	1.24					
Dest	Bulgaria	?	0.04					
Diveleks	Bulgaria	?	0.03					
Orgachim	Bulgaria	?	1.47					

Appendix 6 List of References

Project files FMO

EEA and Norway Grants Evaluation Guidelines 2008-12

EEA and Norway Grants: Task Manager Guide for Scoring of projects for reporting purposes,

EEA and Norway Grants Making a Difference Status Report May 2009-12-10

Proceedings from 'Lesson Learned and looking forward EEA and Norway Grants in the environmental Sector' Warsaw 14 - 16 October 2009.

Sustainability Report 2007. Continuous Development is the basis of sustainability. Kunda Nordic

Review of Energy Projects in Poland - Scanteam and Proeke CDM, 2009

Fagligt Fællesforbund: Grønne jobs, Danmark 2009.

UNEP Green Jobs - Towards decent work in a sustainable world (http://www.unep.org/labour_environment/PDFs/Greenjobs)

<u>Geo Thermal energy Association - (http://www.geoenergy.org/aboutGE/employment.asp)</u>

<u>European Commission -</u> (http://ec.europa.eu/energy/renewables/studies/doc/renewables/2009_employ_r es_summary.pdf)

The European Council for an Energy Efficient Economy (http://www.eceee.org/conference_proceedings/eceee/2001/Panel_1/p1_7/)

JI projects in pipeline. Produced by Risøe, UNEP Centre 2009

ERDF: Energy Efficiency Investments in Social Housing, 2009

The Bulgarian Energy Efficiency and Renewable Energy Credit Line (http://www.beerecl.com/cms/sites/default/files/stats/table_e.htm)

Active Implementation of the proposed Directive on Energy Efficiency (<u>http://www.aid-</u> ee.org/documents/Overallanalysiscasestudies_versiemaart2007.pdf)

Appendix 7 Terms of Reference

Background

EEA and Norway Grants support environmental projects in 15 beneficiary states. The largest part of this green funding is focused on energy efficiency and renewable energy in public buildings, cutting emissions of CO2 and pollutants. Other key areas of support include alleviating water pollution, securing waste management, improving environmental monitoring and preserving biodiversity.

The Financial Mechanism Office has requested a review of the EEA and Norway Grants to support reduction of Greenhouse gases in the beneficiary states.

The project portfolio comprises 150 projects in 13 Member States; of these 129 are targeted renewable energy, energy efficiency and reduction of greenhouse gases, three reduction of air-pollution, 12 waste management and six other sectors.

Objective

The objective for the review is increased learning and reporting on results and outcomes of the support to the beneficiary states within the priority sectors.

The review will assess the performance and results of the interventions in the project portfolio. Both formative (learning) and summative (accountability) aspects will be considered in the review.

The grant's review will demonstrate and describe factors of general importance for the results of interventions financed by EEA and Norway Grants. The experience and lessons learned will be used as input for preparation of the new financial period.

A very important objective is to analyse impact and effectiveness in terms of CO2-reductions and the cost of those for the different project types, sectors and countries.

Another focus area is the programme and its results, impacts and interrelations with other comparable programmes.

Finally the review will eliminate misinformation and wrong data encountered in projects files.

Scope of work

The focus of this review will be on Lessons Learned. The consultant will review the project portfolio in order to identify and quantify the cost-efficiency of the different measures with regard to Greenhouse gas reductions.

The review will not solely focus on cost per tonne reduced, but also take into account other impacts related to the projects, i.e. social, economic and environmental impacts as much as the files and documentation allows. The review

will comprise the full project portfolio resulting in reductions of greenhouse gas emissions – both those that are specifically arranged to reduce such emissions and also those that have greenhouse gas reductions as a side effect.

Project Reviews

The project reviews will be based on materials provided by the Client, such as the application form (APF), the application feasibility study, budget information, appraisal reports (DARs), implementation plans (PIPs), reimbursement claims (PIRs), etc. This information will be supplemented by email exchanges related to questionnaires formulated for gathering relevant data on the projects and/or interviews and on site visits where relevant. It is noted that the DARs received do not include annexes with detailed financial information, baselines etc, but only the main appraisal reports. The review will comprise 150 projects and 3 on-site visits.

The review will focus on the following issues/questions, which will be recorded for each project in an Excel spreadsheet. The spreadsheet and the guidelines for recording will be developed by the consultant.

- **Descriptive section**. Objective, activities, time schedule, beneficiaries, partners, investment, grant and other formal information. This is information is already available in an Excel file providing basic information about the projects. It will be updated during the review process and possible contacts with the promoters.
- Cost-efficiency i.e. cost per reduced tonne of CO2 and project returns (EUR/tonnes, pay-back time if relevant). Cost efficiency will be calculated as NPV of the cash flow over the lifetime of the project divided by the discounted value of the annual CO2 reductions (all GHG transformed to CO2 equivalents), where possible. When this is not possible the information provided at the appraisal or the consultants 'best estimate' will be used. The consultant will add information about the level of confidence attached to these calculations. The Consultant will also rely on the results and database from 'Review of Energy Saving and Renewable Energy Projects in Poland'.
- Which of the measures supported are most effective in terms of greenhouse gas reductions? The effectiveness of measures will be assessed in terms of project types and sectors that accounts for the largest volumes of GHG reductions. This assessment will take certainty and time (long-term vs. short term) to provide the GHG reductions into consideration.
- Compare the results of EEA and Norway Grants funding with other greenhouse gas reduction measures taken in the beneficiary states – both in relation to cost-efficiency and overall impact. This assessment will be based on collection of data on cost of emissions reductions from the 13 countries and their relevant programmes. The Consultant will apply data from his own source, available documents and contact the relevant authorities in the 13 countries in order establish a fair comparison between the projects in EEA and Norway Grants' portfolio. The data will be allo-

cated on comparable measures to the extent possible. The sources for the comparison will be documented and methodological problems identified and commented on.

- Has it been necessary to support projects with short pay-back time in order to trigger measures? Is it possible to say something meaningful about the grant rate in such cases? The consultant will calculate return of the investment ex-ante and ex-review, the grant rate for the project, i.e. Grant/Total cost in percentage, and identify and comment the relationship between these variable. The key question is what the optimal grant level is and should this program adjust its grant level in the future. Experiences from other programmes can also be included here.
- Assess other sustainability effects related to the projects (environmental, social, and economic). The consultant will collect the scores from the information obtained for review and record data in a database and comment on the results. Job-creation aspects will also be looked into to the extent possible, via the questionnaire developed and via any interviews or site visits. However it must be noted that it is not easy to obtain accurate data on sustainability, particularly for projects still on-going.
- Are the funds provided by the EEA and Norway Grants additional or supplementary for the various types of projects supported? The key question is whether EEA and Norway Grants is filling in gaps in Donor funding, or if the grants support other work funded by other programmes, such as the EU Cohesion funds, EBRD, Life and other EU programmes.
- Assess effectiveness and impact of infrastructural versus "soft" projects in EEA and Norway Grants' project portfolio. The consultant will divide the project portfolio in 'infrastructural' and 'soft' projects (capacity development etc), compare and comment on the effectiveness and impact from the two groups, based on the data obtained from this review. The consultant will also provide qualitative comments on the observed differences in the performance of the project types.
- Assess the quality of the baseline and target values. Based on the file information gathered at the FMO, the energy review for Poland, and other information obtained during this review, the Consultant will record qualitative information on the baselines and provide statistical breakdowns of the results. The consultant will also, based on the information obtained, comment on the general quality of the baseline information in the projects and EEA and Norway Grants' handling of this information in the project cycle.

In cases where information is insufficient, difficult to interpret or especially interesting, the consultant will contact the project promoter by telephone/e-mail in order to fill in the gaps. Replies will be recorded and provide an up-date of

the database. In certain cases site visits will also be relevant in order to gather necessary information¹³.

The consultant will review EEA and Norway Grants project files in Brussels. During the stay the consultant will contact task managers etc. for interviews about project cycle management. The consultant will contact the Focal Point in Poland and interview the responsible task about project cycle management.

Source for review of projects

The source will be the information in the APFs, feasibility studies, budget information, DARs, PIPs, PIRs, reports, etc. provided by the client, supplemented by a data gathering questionnaire, interviews and site visits. The questionnaire will be disseminated in English and the Consultant will send out two reminders in order to promote a high response rate.

Case-studies

The Consultant will include three to four case studies in the report. These casestudies are meant to draw attention to particularly interesting projects. Projects relevant for case studies could for example be projects with exceptional CO2 reductions, particularly interesting choice of technology, particularly costeffective projects or similar. Two candidates are identified below, and the consultant will choose the remaining on basis on the scrutinization of FMO files under 3.1.

- Estonia 0019 *Reuse of Solid Combustible Waste in Cement Rotary Kilns of AS Kunda Nordic Tsement.* The purpose of the Project it to improve the solid waste combustion scheme at AS Kunda Nordic Tsement, with the overall objective to protect the environment by reducing the amount of waste in landfills in Estonia and the use of oil shale in cement production. The Project Promoter is AS Kunda Nordic Tsement. The Project shall be implemented in partnership with the Estonian Waste Management Association, Reci Eesti AS, the Estonian Environmental Research Centre, Tallinn University of Technology and the Ministry of the Environment of the Republic of Estonia. The Focal Point shall ensure that the Project Promoter provides at least 77,46 percent of the total eligible costs from own funds.
- Slovakia 0029 Vrable *biomass for heat production*. The purpose of the project is to utilise biomass for heat production and to reduce CO2 emissions in the town of Vrable, with the overall objective of contributing to the sustainable development of Vrable region. The project comprises demolition of old plant, installation of biomass boiler, technological works and construction of storage space for biomass material. The Slovak government budget shall provide at least 15 percentage of the estimated eligible cost.

Activities

The consultant will undertake the following activities:

¹³ As proposed in the budget.

Mobilisation and preparation of Inception Report

- Preparation of ToR, working schedule and budget.
- Data gathering and inception report preparation

Preparation of database to record review information

- Prepare database for recording of information and data
- Preparation of instructions for recording
- Distribution of projects and information to the project team
- Collect benchmarking information regarding GHG projects in the 13 countries (EU, national authority, literature review)
- Reviewing projects and record information in database partly in Brussels
- Contact promoters
- Guide for on-site project review
- On site project visits
- Analyse data and information

Preparation of Draft final report for comments and consultations

- Write report
- Submit report
- Review comments from client and beneficiaries

Preparation of final report

Write final report

Dissemination seminar

- Prepare and conduct seminar in Poland (0.5 day)
- Outputs and Reporting

The following output will be prepared by the consultant:

- ToR
- Inception Report, including lay-out of database and preliminary structure for draft final report
- Draft Final Report
- Final Report (3 p summary, max 40 pages main report)
- Dissemination seminar for client and beneficiaries. The seminar will take place at the client premises in Poland and the client will host the event and prepare invitations.

Time Schedule

The table below shows the time schedule for the review.

Activity	Week	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
1	Mobilisation and preparation of Inception Report																			
1.1	Preparation of ToR, working schedule and budget.																			
1.2	Data gathering and inception report preparation																			
2	Preparation of database to record review information																			
2.1	Prepare database for recording of information an data																			
2.2	Preparation of instructions for recording																			
2.3	Distribution of DAR's to the project team																			
2.4	Collect information about GHG reduction in beneficiary coun- tries																			
2.5	Reviewing DAR and record information in database																			
2.6	Contact beneficiaries and collect information																			
2.7	Up-date DAR information																			
2.8	On-site reviews																			
2.9	Analyse data and information																			
3	Preparation of Draft final report for comments and consultations																			
3.1	Write report																			
3.2	Submit report																			
3.3	Review comments from client and beneficiaries																			
4	Preparation of final report																			
4.1	Write final report																			
5	Dissemination seminar																			
5.1	Prepare and conduct seminar in Poland																			

Table 8

Time schedule

This estimated use of time per project file is three hours (review documents, record information and possible contact to the promoter) and four days have been allocated to each in-depth review, inclusive preparation, site visit and interviews.

The presentation of results during the dissemination seminar in Poland will be based on the draft final report.

Annex 1: List of Beneficiary states

- 1 Bulgaria
- 2 Cyprus
- 3 Czech Republic
- 4 Estonia

- 5 Greece
- 6 Hungary
- 7 Latvia
- 8 Lithuania
- 9 Malta
- 10 Poland
- 11 Portugal
- 12 Romania
- 13 Slovakia
- 14 Slovenia
- 15 Spain