

Setting	
Country	Germany
Location	Bavaria
Project start date	1.1.2008
Project end date	31.12.2012
Technology keywords	Fuel switch, buildings
Host sector	Bayerngas, energy supplier in Bavaria

Technical summary of the project	
Objective of the project	Increase energy efficiency by fuel switch with heating systems
Project description	
<p>By paying an eco bonus, the program of activities (PoA) encourages commercial and industrial customers to convert the existing heating systems running with fuel oil, coal or liquid gas to natural gas-fuelled heating systems.</p> <p>This project follows a programmatic approach resulting from its character as a support programme. This approach aims to combine many small, diverse emission reduction programmes in one project with a uniform system of incentives, uniform monitoring and clearly defined framework for all participants. The participation is voluntary for each JPoA participant.</p> <p>The aim of the project is to reduce the GHG emissions by conversion to natural gas-fuelled boilers and direct heating systems as well as by the subsequent increase in efficiency. This leads to replacement of older, more emission intensive heating systems in favour of more environmentally friendly heating systems with natural gas-fuelled boilers and direct heating systems.</p> <p>The target of reducing GHG emissions is meant to be reached by:</p> <ul style="list-style-type: none"> • higher efficiency and therefore a lower fuel consumption by using modern condensation and low-temperature boilers • lower CO₂ emissions due to higher hydrogen quantity and lower carbon quantity of the fuel related to the heating value <p>Despite many environmental advantages offered by modern natural gas-fuelled heating systems, not all customers are interested in the conversion.</p> <p>Payment of a bonus offers an additional financial incentive for modernization of a heating system at a point when the average technical lifetime is not reached yet. The investment costs of an early conversion to a natural gas-fuelled heating are partially being compensated. The project therefore provides a financial incentive to overcome the hindrances.</p> <p>So far Bayerngas and the project partners did not offer any incentive programs for this customer group of the given JI project. Previous incentive programs of Bayerngas and the project partners focused on household customers only. This JI project focuses on commercial and industrial customers only, due to lack of such incentive programmes in the past. That is why there is no intersection of the customer groups.</p> <p>Furthermore in Germany for this target group - commercial and industrial customers - no other incentive programs are known.</p> <p>Different players for this JI project are defined as follows:</p> <ul style="list-style-type: none"> • Bayerngas is responsible for the organisation and implementation of this JI programme of activities and therefore the coordinating/managing entity. Furthermore Bayerngas is the project applicant and the responsible body for all administrative affairs of the involved parties in host and investor countries. • JI programme of activities participant can be a regional energy supplier or distributors or a single customer, who implements emission reduction measures. 	

This JI project is a voluntary action by Bayerngas. The participation on this JI programme of activities is voluntary for each JPoA participant. Every JPoA participant has to confirm that he is neither registered as a JPA nor included in another registered JPoA.

Several criteria for the participation has been defined, some are listed below:

- the applicant for the eco bonus is an individual customer and owner of the heating system
- the applicant converts to a new gas-fuelled heating system (condensing or low-temperature boiler for heat or steam production or direct heating systems)
- the old heating system was run on fuel oil (heavy and light fuel oil), liquid gas, natural gas or coal (lignite and anthracite) and didn't run on wood only or partly on biomass
- the minimum capacity of the heating system is 100 kW for residential buildings; in any other cases is it 50 kW
- the agreement on the gas supply contract for commercial and industrial customers is signed after the official project start and the new system should be implemented latest by 31.12.2012.
- the old heating system does not require replacement under the German Energy Saving Regulation (EnEV)
- The emission reductions, which arise from efficiency increase, can only be taken into account in case they are defined as a new state-of-art (Best Available Technology).
- the project participant does not run a CHP plant nor an installation covered by the German Renewable Energy Sources Act (EEG) emissions reduced are not covered by the EU Emission Trading according TEHG (Treibhausgasemissionshandelsgesetz, German GHG Emission Trading Law)
- any further subsidies for implementation of those activities are not available

Technology(ies) to be employed or measures, operations or actions to be implemented by the project:

Steam boilers

Modernization of the steam boilers process through a preterm replacement. The modernization is performed by efficiency increase, e.g. installation of an economizer, continuous burner regulation, oxygen regulation, etc. in industry and anufacturing, the difference between the efficiency of modern process steam boilers and of older boilers is obtained mostly due to the decrease of the flue gas temperature and improvements in operation on the part load. The efficiency gains can also be obtained through exchange of an old boiler. Primary energy demand for the steam generation in the operating systems can be reduced by installation of an economizer or an oxygen control. There is also the possibility to replace the burner only by conducting a fuel switch to gas.

Hot Water boilers

Adoption of more efficient heating boilers leads to a higher annual efficiency factor. In contrast to the conventional constant temperature boilers, low temperature boilers are operating at lower or varying temperatures. Operating on the partial load leads to significantly higher efficiency levels, which is mostly the case for heating systems. Condensing boilers are even more efficient, as part of the steam enthalpy contained in the water vapour in the flue gas can be used by condensation. There is also the possibility to replace the burner only by conducting a fuel switch to gas.

[source: UNFCCC - CDM Executive Board: *PROJECT DESIGN DOCUMENT FORM (CDM PDD)* - Version 03.1]

Environmental and social benefits

(Estimate of) Greenhouse Gases abated (in metric tons of CO₂-equivalent)	Annual average of estimated emission reductions: Up to and including 2012: 19,518 tCO ₂ -equivalent
Number of reduction units (EAU, CER, ERU, AAU)	Due to the downturn in the market price for Emission Reduction Allowances and Unit, the programme has seen some difficulty in attracting the foreseen number of commercial and industrial customers. So far roughly 3,000 tCO ₂ -equivalent could be realised within the project.

Socio-economic aspects: What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project?

The eco bonus programme contributes to the implementation of energy efficient heating systems with commercial and industrial customers that do not participate in the EU ETS. As these companies do not participate in the EU ETS there are not necessarily obliged to take investments in more energy efficient systems into consideration. Most entrepreneurs are not keen to replace existing heating systems as long the running systems represent the most economical option, at least in a short-term perspective.

With the eco bonus the willingness to make investments in more energy efficient heating systems can be increased by setting a financial incentive. Companies that would not have undertaken such investments without the incentive scheme do now undertake these energy saving investments. Moreover the companies participating in the programme can serve as a role model for other enterprises and help creating more consciousness with regard to energy efficiency. Additionally the conversion of heating systems to natural gas heating systems strengthens the economic activity of domestic technology suppliers in the Bavarian region and serves as a marketing instrument for Bayerngas getting in touch with potentially energy and environmentally conscious new clients.

The bonus idea that sets financial incentives for energy efficient investments has already been used as a conceptual design for JI PoA in Germany. JI PoA like JIM NRW, JIM Hessen or RWE Climate Bonus Project Heat Pumps have already been approved by the German Designated Focal Point, DEHSt.

Methodology used (if applicable: approved baseline methodology or study done - refer to this; and monitoring organisation)

CDM small-scale Methodologies AMS-II.E (Energy efficiency and fuel switching measures for buildings, Version 10), AMS-II.D (Energy efficiency and fuel switching measures for industrial facilities, Version 11) and AMS-III.B (Switching fossil fuels, Version 12) are partly applicable for this project and therefore considered in some points in this project document. These Methodologies e.g. not applicable regarding the baseline emission calculation, because it is required to monitor the energy use of the old installation (past energy demand). In this project we use the actual energy demand of each new installation and multiply it with the emissions factor of the old used fuel.

Due to these special conditions of this programmatic approach a project specific baseline methodology will be used in which prove of GHG reductions is provided in the way proposed in this document. Therefore, a conservative approach for any arguable data for calculation and adaptation is used.

Basically, the following baseline approaches are available:

- **Historic emissions:** As part of the JPoA, for each individual participant the past situation of the heating systems before conversion is recorded. Each participating installation is evaluated individually. Within this baseline approach the actually achieved emission reductions are calculated with a high accuracy.
- **Least cost alternative:** in many cases a replacement or modernisation of a steam or hot water boiler or direct heating system can be already economically reasonable, also without an additional payment. The JPoA does not aim on JPoA participants who are planning to modernize their steam and hot water production anyway and just looking for the most economic way of its implementation. Of interest are those operators, who are not planning to modernize their installations without any additional incentive. These owners often decide not in the favour of pure operational principles. Because of some other restraints they continue operating the installations until the end of their actual technical lifetime or unless the modernization activities are legally enforced. Therefore the Least Cost Alternative approach is not applicable for the conversion of the existing installations.
- **Benchmark:** A comparison with the best 20% of comparable projects is not appropriate here. Goal of the JI project is not the distribution of a new technology, which has not been used in Germany before. It concerns the innovative development of a potential, which has not been reached up to now, namely a modern and less polluting production of steam and hot water.

The approach of calculating the baseline scenario with historical emissions is therefore the most suitable approach

for existing heating systems. As the emissions vary from system to system and from year to year, the specific emissions will be used. This enables an exact calculation of the actually generated emission reductions.

Economic data

Capital costs	18 projects implemented by other companies; no data available.
Financing scheme	18 projects implemented by other companies; no data available.
Financing organisation (if third party)	There is no public funding from Annex I countries used in the project activity.

Project developer

Name of the project developer	Future Camp Climate GmbH Chiemgaustr. 116, 81549 Munich, Germany
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Host organisation

Name of Host organisation	Bayerngas GmbH Poccistr. 9 80336 Munich, Germany
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Technology provider

Name of Technology provider	Other producers of heating systems, for example: Viessmann GmbH - www.viessman.com Wolf Heiztechnik GmbH - www.wolf-heiztechnik.de Loos Deutschland GmbH - www.loos.de SAACKE Service GmbH - www.saacke.de Astebo gmbh - www.astebo.com Weishaupt - www.weishaupt.de
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Additional Information

Printed or electronic reports or other literature available:

Title: JOINT IMPLEMENTATION PROJECT DESIGN DOCUMENT FORM Cost: none

Address for download of electronic document:

http://www.dehst.de/cln_090/nn_476696/DE/JI_CDM/JI/JI_Zustimmung/JI_Zustimmung_node.html?nnn=true

Project Web site: http://www.bayerngas.de/data/07_dialog/bonus.html