

Ex post evaluation – Croatia

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Sector: Energy generation, renewable sources (CRS code: 23210)
Project: Programme for the Promotion of Energy Efficiency and Renewable Energy (BMZ no. 2004 66 326 / 2004 70 567 (complementary measure))*
Project executing agency: Hrvatska Banka za Obnovu i Razvitak (HBOR)



Ex post evaluation report: 2021

All figures in EUR million	Project (Planned)	Project (Actual)
Investment costs (total)	24.50	41.00
Counterpart contribution	5.00	21.50
Funding	19.50	19.50
of which BMZ budget funds	19.50	19.50

*) Random sample 2017

Brief description: The FC module “Programme for the Promotion of Energy Efficiency and Renewable Energy” comprised the establishment of a credit line to finance investments in renewable energies (generation) as well as energy efficiency benefiting the environment and climate in Croatia. The project-executing agency was Hrvatska Banka za Obnovu i Razvitak (HBOR), which forwarded the funds from the credit line to qualifying projects through partner banks. Overall, eight projects were promoted within the scope of the module (seven projects with measures for generating energy from renewable sources and one energy-efficiency project). The programme also comprised an accompanying measure amounting to EUR 1.5 million to support HBOR and potential investors during the application process and when operating the plants.

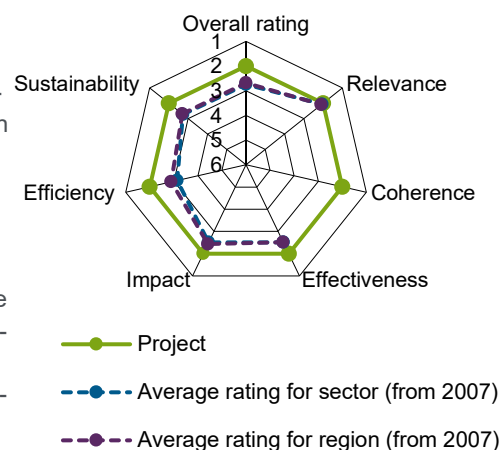
Target system: The objective of the programme (outcome) was (i) to increase energy efficiency, particularly in the area of commercial businesses and (ii) to increase the use of renewable energy sources in Croatia. The overarching development objective (impact) was to contribute to protecting the climate and to increasing supply security in Croatia.

Target group: The programme’s immediate target group was private companies, investors and operators of plants that use renewable energy sources as well as companies and institutions taking measures to improve energy efficiency. The banks are intermediaries and were able to develop new business segments by providing loans in the area of long-term infrastructure financing. The indirect target group is the population of Croatia, which benefits from efficient energy use and the resulting lower environmental impact.

Overall rating: 2

Rationale: It was possible to make a significant contribution to strengthening renewable energy sources in Croatia. The high implementation efficiency and sustainability of the financing programme in particular are noteworthy. The coherence could have been higher if there had been a closer connection to the German activities in SME promotion or in the municipal sector. Overall, good results were achieved both at the outcome and impact levels.

Highlights: With the Programme for the Promotion of Energy Efficiency and Renewable Energy in Croatia, it was possible to set up a financing programme in cooperation with the state-owned promotional bank HBOR that has influenced the sector in the long term. Despite the fact that German-Croatian development cooperation has come to an end and the country has joined the European Union, the programme continued and created the basis for the promotion of over 300 individual projects. In particular, projects in the biogas and solar photovoltaic segment, as promoted by the credit line, were replicated successfully.



Rating according to DAC criteria

Overall rating: 2

Ratings:

Relevance	2
Coherence	2
Effectiveness	2
Efficiency	2
Impact	2
Sustainability	2

Relevance

The commitment for the “Programme for the Promotion of Energy Efficiency and Renewable Energy” in Croatia was made within the scope of intergovernmental discussions in 2004. The objective defined at the time was the reduction of fossil fuel consumption; the programme was fine tuned together with the Croatian partners within the scope of a feasibility study.

At the time of the project appraisal in 2007, Croatia’s energy sector was in the midst of a liberalisation process to meet the demands of the EU energy market. The relevant implementing provisions with regard to feed-in rates, grid access, licensing/authorisation of operations, etc. became effective in July 2007 and were the basis for the stronger integration of private electricity producers. In addition to the legal and institutional framework conditions, the credit line was also selected as an instrument for energy efficiency and renewable energy generation to support the integration of organised, decentralised, private-sector energy generation.

Against the backdrop of the Yugoslav War, adding supply security to the target system at impact level was an important addition. This also increased the relevance of the programme within the local context. At the time of the project design, there were still significant uncertainties at the regulatory level with regard to the promotion of renewable energies. These uncertainties played a large role in the multiple delays at the start of the project. The relevance of the planned credit lines was ultimately strengthened greatly by market developments within the context of the financial crisis.

The logic behind the programme was as follows: by providing a credit line that focused on “energy efficiency and renewable energy sources” with favourable terms for the Croatian Bank, the intent was to have the state bank and local commercial banks finance more renewable energy measures. The hope was that the banks would pass on the favourable terms, which would ultimately lead to the financing of new projects for developing renewable energy sources and strengthening energy efficiency. The ultimate goal was to increase both energy efficiency and the share of renewable energy sources in Croatia. The idea was to establish this product on the market for the long term thanks to many SMEs using the loans and banks identifying the business model. This would ultimately result in a reduction in fossil fuel consumption and carbon emissions.

From today’s perspective, the relevance of the programme is slightly higher than it was at the time of the project design, particularly due to increasing awareness of the issues of climate action and resource conservation. The relevance is assessed as good overall.

Relevance rating: 2

Coherence

The project was the first German FC project in Croatia’s energy sector. It was created as the result of an FC-financed trans-regional study to identify projects for improving energy efficiency, which was later expanded to include the area of energy efficiency measures and renewable energy sources in Croatia. In general, the priority areas of German-Croatian development cooperation were primarily the promotion of

municipal infrastructure and of small and medium-sized enterprises (SMEs). This can also be seen in the key areas of support of GTZ's work, for example, "Promotion of the economy and employment". This also contains the only reference to energy consumption: a component that was intended to improve energy management concepts in the tourism and wood processing industries.

Donor coordination was primarily handled in relation to the ongoing EU accession negotiations and was mainly shaped by the EU delegation in Zagreb; a doubling of approaches was avoided successfully. For example, other international donors implemented further projects in the energy sector that ran parallel to the FC-financed project, and these were primarily promoted by the World Bank/GEF, UNDP, EU and the Austrian government. These projects also set the objective of improving energy efficiency and the promotion of renewable energy sources in Croatia. However, they mainly concentrated on advisory measures, the transfer of expertise and on creating adequate framework conditions.

The FC programme was a useful supplement for those components from other donor programmes, as they primarily contained Technical Cooperation measures. Other donors' groundwork resulted in synergy effects which were used in this FC programme. Particularly noteworthy here were the activities to improve the framework conditions and the development of a project pipeline. The project is also complementary to the German DC focus area, as the resultant energy supplied also had a positive influence on the further development of the promoted SMEs. At the same time, it contributed to SDG 7 "Affordable and Clean Energy" and indirectly to SDGs 8, 9 and 13. Of particular note is the high mobilisation of private capital, which is an important prerequisite for achieving the SDGs.

Croatia adopted a new energy strategy in the context of its accession to the EU. In addition to further steps towards liberalising the energy market, emphasis was placed on the significant role of expanding renewable energy sources and increasing energy efficiency. One important measure of the Croatian government to meet this end was the establishment of an "Environmental Protection and Energy Efficiency Fund" (EPEE fund). Part of the funds was intended for use in projects promoting energy efficiency and renewable energy sources. From 2004 to 2005, the EPEE fund granted funding exceeding EUR 50 million; in 2007, the budget was around EUR 132 million. At the same time, the government declared its objective to promote the mobilisation of private capital.

Overall, even though the project's focus area was not a priority of German-Croatian development cooperation, it became an indirect aspect of German cooperation with Croatia. It functioned well in tandem with projects by other donors and fit into Croatia's energy strategy. The coherence is therefore rated as good.

Coherence rating: 2

Effectiveness

The project objective was to increase the energy efficiency, particularly in commercial businesses, and to increase the use of renewable energy sources in Croatia. Furthermore, the intention was to strengthen the project preparation capacity of investors and HBOR with a complementary measure.

The target achievement at outcome level is summarised in the table below.

Indicator	Status PA, target PA	Ex post evaluation
(1) Energy efficiency (average increase in energy efficiency from individual measures)	Status PA (2007): n.a. Target: 20 %	Only relevant for one project or 7 % of the project volume. Value achieved: around 10 % (estimate as there was no monitoring of consumption before implementation)
(2) "Macroeconomic profitability" (internal rate of return per individual project)	Status PA (2007): n.a. Target: 8 %	Relevant for seven projects or 93 % of the project volume. Value achieved: 19.8 % (weighted according to the volume of the project;

		individual measures between 8.2 % and 38.2 %)
(3) SME share (share of projects with SME investors)	Status PA (2007): n.a. Target: 50 %	62.5 %
(4) Mobilised investments in renewable energy and energy efficiency projects	Status PA (2007): n.a. Target: 24.5 million	EUR 42 million

The open credit line was implemented between 2009 and 2013. Out of the 19 projects identified by HBOR and the partner banks (ten of which were renewable energy and nine were energy-efficiency projects), a selection of eight projects was ultimately financed. Of the eight projects promoted, seven of the projects were related to investments in renewable energies and one project was related to an investment to increase energy efficiency. At the time of the final review report in 2014, all eight projects had been implemented and were fully functional.

The outcome-level indicators (1) and (2) defined during the project appraisal were achieved in nearly all individual projects. However, when aggregated, indicator 1 was not achieved as the energy efficiency project (exchanging two boilers in a paper factory) was only able to achieve an efficiency increase of around 10 % (target 20 %). All of the achieved values for macroeconomic profitability in renewable energy projects were above the target of 8 %.

In addition to the above-mentioned indicators (1) and (2), indicators for target-group relevance (SME share) and leverage (mobilised investments) seem reasonable for assessment of the effectiveness of the programme. The programme was able to reach investors from the small and medium-sized enterprise segment (<250 employees); the SME share among the 19 projects identified was very high at 62.5 %. Other banks' high propensity for co-financing was also ultimately an indication of the leveraging function of the credit line. Instead of the planned EUR 5 million, additional financial contributions were made resulting in a total investment of close to EUR 22 million in the eight projects. The high degree of mobilisation of private capital is a positive sign.

The positive development of the programme was supported by various aspects of the programme design - the technical consulting within the scope of the accompanying measure was particularly noteworthy. This support during project implementation was critical especially for the cooperation with inexperienced investors and for achieving the positive impacts with regard to preventing emissions.

Overall, the programme's effectiveness was rated as good.

Effectiveness rating: 2

Efficiency

The project fully met expectations for efficient implementation. The institutional framework, implementation period, arrangement of terms and the microeconomic profitability in this context are to be examined within the scope of the cost-benefit assessment.

One major success factor for the efficient implementation of the credit line was the very close integration of the processes into the institutional structure of the project executing agency HBOR. The close connection is primarily due to the fact that the credit line was used to finance an existing HBOR programme to promote renewable energies and energy efficiency. Lending via partner banks is also an established practice in the Croatian financial market. Of the eight individual projects, seven were financed by the partner banks and one was financed directly; the directly financed project was co-financed. Feedback from the partner banks and the investors about loan processing efficiency was very positive, although individual projects reported difficulties when obtaining state approval. With the help of the accompanying measure, HBOR was also able to achieve a significant degree of professionalisation and increased efficiency in application processing and project appraisals.

The implementation period was around 48 months, from the signing of the agreements to full loan disbursement, and thus ran six months longer than estimated at the project appraisal. When compared to other credit lines for energy efficiency and renewable energies, this delay is not unusual and there were no severe cost increases. The prolongation can be ascribed to the gradual implementation of individual investments, some of which were pilot projects in Croatia (particularly biogas and co-generation plants).

The process for creating the terms was aligned with the framework conditions of previous HBOR programmes and the yield curve on the bank market. At the time of the project design, the interest rate on the interbank market (Zibor) was still over 8 %, so the offered interest rate of 6 % (or 4 % under special conditions) was very attractive for ultimate borrowers. With the downturn in the reference interest rate, the external interest rate for the HBOR credit line was adjusted downwards several times to maintain the interest rate incentive for new projects. Overall, the share of interest subsidies was below 10 % of the investment volume, demonstrating good production efficiency of the programme.

The microeconomic profitability of the supported projects was monitored both at the project appraisal and after start-up of operation. All eight projects achieved good allocation efficiency with a minimum profitability of over 8 %; it was even possible to achieve a weighted average of around 38 %. The investors' economic development was also positive during the term of the programme; expansions, takeovers, early repayments and refinancings showed dynamic development at the project-sponsor level. The programme was implemented efficiently overall.

Efficiency rating: 2

Impact

The overall objective of the programme is to increase the supply security in Croatia and strengthen climate action in the area of energy generation and commercial energy consumption.

Target achievement at the impact level is summarised in the table below:

Indicator*	Status PA, target PA**	Ex post evaluation*
(1) Share of the nation's energy generation attributed to renewable energy generation	Status PA (2007): 38 % Target PA: >40 %	2017: 60 % 2013: 67 %
(2) Supply security (measured as ratio of national energy generation to energy consumption)	Status PA (2007): 49 % Target PA: n.a.	2017: 49 % 2013: 53 %
(3) Preventing emissions (tonnes of CO ₂ saved due to the investments)	Status PA (2007): n.a. Target: 30,000 t p.a.	108,000 t CO ₂ p.a.
(3) Energy intensity (measured as energy consumption per USD 1,000 GDP)	Status PA (2007): 0.16 toe/USD thousand GDP Target PA: <0.16	2017: 0.14 toe/USD thousand GDP 2013: 0.15 toe/USD thousand GDP

*) Data source: International Energy Agency (IEA)

The impact of the programme is generally positive; however, it is difficult to attribute this to specific factors as the indicators were measured at a national level. This means that further factors external to the project also influenced the projects. In addition, the financing volume of the project was low in relation to the Croatian economy.

The market share of renewable energies in electricity generation in particular developed very positively during the term of the project. However, hydropower, and increasingly wind power, are dominating the electricity mix in Croatia in relation to generation capacities from renewable sources. So the impact of the

credit line cannot be explained as much by the amount of financed generation capacity as by its nature as a pilot programme for the financed projects in the area of solar, biomass and biogas power generation.

Contrary to the estimates at the time of the project appraisal, the supply security (domestic energy generation relative to energy consumption) has not worsened significantly. The financed projects and the institutional strengthening of HBOR made a significant contribution to expanding national generation capacities parallel to the growth in demand. In addition to the availability of financing, the growth in generation capacity was supported by improvements in the framework conditions on the market for private electricity producers in the form of attractive feed-in tariffs.

Overall, it was possible to achieve a significant impact with regard to annual saved tonnes of CO₂. While the savings per year were originally calculated at around 30,000 tonnes, average savings of 180,000 tonnes of CO₂ were ultimately achieved.

The energy intensity of the Croatian economy also gradually improved over the course of the project term. The energy efficiency in the industrial segment improved by around 1 % annually between 2007 and 2015, while energy efficiency in the transport sector only improved by 0.3 % annually. However, given that only one of the eight financed projects can be allocated to the category of energy efficiency, it is not possible to attribute the impacts directly to these projects. Rather, it can be assumed that the use of EU funds to broadly promote energy-efficient approaches also had a positive influence.

The effect of the credit lines on the business development of investors was positive overall; several companies further expanded their business sectors in the area of energy generation. The biogas plant operator used the positive experiences from the project to develop three more plants with larger generation capacity and successfully connected them to the grid.

In relation to the impact in terms of development policy, it is not possible to clearly discern whether the measures were generally additional and if so, to what degree. On the one hand, this type of financing of renewable energy and energy-efficient projects was not available in Croatia, and the banks had little knowledge relating to these types of financing. The project was able to close this gap and the positive character of the projects became apparent. On the other hand, the internal rate of return was so high that financing was not necessarily needed. Rather, potential for profitability was given, and the banks would possibly have entered the market even if the FC financing had not been available. Overall, however, the FC project presumably had a high signalling effect and at least accelerated commercial banks' activities promoting renewable energy sources and energy-efficient projects.

Overarching developmental impact rating: 2

Sustainability

The programme for promoting energy efficiency and renewable energy sources in Croatia was contractually agreed in 2009; at that time, the accession negotiations for Croatia's acceptance into the European Union were already taking place. The complete disbursement of the project funds in 2013 then took place on the same day as Croatia's official accession to the EU. Despite the extensive associated changes in the finance and energy sectors, HBOR successfully pursued the Programme for the Promotion of Energy Efficiency and Renewable Energy. HBOR requested a follow-up phase for this refinancing line, but this was not implemented in light of the EU accession.

Due to the structures and technical expertise that were established, HBOR was able to solidify its role as a sought-after financing partner for investments in energy generation from renewable sources. This made it possible to successfully replicate the programme's piloted project structures such as small photovoltaic plants as well as biomass and biogas approaches. Overall, more than 180 projects with a financing volume of over EUR 350 million have already been implemented; 2016 (EUR 78 million) and 2018 (EUR 92 million) were particularly successful. This was facilitated by the expansion of the programme using refinancing funds from the European Investment Bank (EIB), which has become one of HBOR's most important financing partners since German-Croatian development cooperation ended.

The two main influencing factors on the completed programme's sustainable success are the planned transition from the energy feed-in tariff to an auction model and the negotiation of the European Union's medium-term financial framework 2021–2027. Although strong pricing competition on the energy market

can lead to a higher demand for cost-effective refinancing opportunities, the demand for HBOR's financing products is rather restrained due to the availability of various EU grants. This is positive given the sustainable continuation of this and similar projects. At the same time, it is unclear as to how Croatian partner banks will handle the challenges that stem from declining interest margins and higher customer requirements.

From today's perspective, the programme positively affected the availability of financing products for investments in renewable energies and energy efficiency in the long term.

Sustainability rating: 2

Notes on the methods used to evaluate project success (project rating)

Projects are evaluated on a six-point scale, the criteria being **relevance, coherence, effectiveness, efficiency, overarching developmental impact** and **sustainability**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).