

RES-coop-Croatia - Energy cooperatives as a new model for renewable energy development in Croatia: investigation into biogas production from agricultural waste in Gundinci municipality



Description of the project including the project's goal

The main goal of the RES-coop-Croatia project is to promote renewable energy sources through cooperatives, owned by local communities. These locally owned investments create new jobs and income for local communities. Since energy is produced from local renewable sources, energy security is increased as well. Within developing such cooperatives, UNDP has selected Gundinci municipality as a potential pilot project due to its intensive livestock husbandry and partnership with Reduco Energo. Local farmers currently employ inefficient and ecologically harmful manure management practices. Manure storage facilities leak their contents in times of heavy rain. What is more, their capacity is small, which means farmers either pile the manure on their land - where it waits to be plowed into ground - or simply dump it into local waters. This degrades local water quality and potentially effects human health. Within solving this problem, Reduco Energo investigated the biogas energy potential of manure using the Material Flow Analysis methodological framework. The research found that using manure from 43 local farms and households – and mixing this with corn silage and sorghum silage in an anaerobic digestion facility, in a ratio of 8:2 in favor of manure – the farmers could produce 55% more electricity than the overall village consumes in one year. Furthermore, a greenhouse of 1ha could be heated during the entire year with the heat generated by the plant.

Project's objectives, activities and achievements

The objectives of the RES-coop-Croatia project are: a) raise awareness on the benefits of producing renewable energy through energy cooperatives b) education of target groups c) provide technical and legal assistance to three selected pilot cooperatives. Within reaching objective a) we are: i) writing a manual on setting up cooperatives in Croatia; ii) developing a web site where project activities will be presented; iii) participating in conferences and holding public presentations on energy cooperatives. Within reaching objective b) we are: i) organizing 10 seminars/lectures for target groups across Croatia; ii) organizing panel discussions between multiple stakeholders; iii) building local capacity. Within reaching objective c) we are: i) selecting most promising initiatives in Croatia; ii) conducting Material Flow Analysis in these locations (such as the one in Gundinci); and iii) providing administrative and legal support for our pilot projects.

After finishing the study in Gundinci, Reduco Energo organized a presentation of the research in the village where the municipal mayor and involved farmers participated. Their willingness to continue with the project was reaffirmed. Following this we are jointly organizing a workshop where we will initiate the formation of the energy cooperative. The RES-coop-Croatia project also expects to conduct the Material Flow Analysis in other locations in Croatia. For instance, olive oil producers in Dalmatia have expressed their interest in supporting a study that would investigate amounts of olive pomace for energy utilization.

Apart from providing economic and technical assistance to Gundinci, the RES-coop-Croatia project started receiving media attention (Govornica, TV HRT4, 29.03.2013., Zadarski list, 21.03.2013).

How young people were involved:

The UNDP Croatia office initiated and planned the RES-coop-2020 project. However, the research in Gundinci was entirely initiated and conducted by Reduco Energo and in particular Mr. Mak Đukan. Since UNDP and Reduco Energo share the same goal – to develop energy cooperatives in Croatia – we joined our forces. The project in Gundinci is now part of the RES-coop-Croatia project, as UNDP is helping Reduco Energo to develop the cooperative. The Gundinci example will also be showcased in the publications that will follow up RES-coop-Croatia activities.

Considering the results that were achieved in Gundinci, we have decided to adopt the Material Flow Analysis (MFA) methodology for other locations in Croatia. In particular this methodology will be used for the pilot projects we aim to help develop. Therefore the project merges UNDPs name and recognition with the knowledge and expertise of Reduco Energo.

The RES-coop-Croatia project involved young people by partnering with Reduco Energo – a youth lead startup company. UNDP also employed four young interns to work on the project for four months. With our supervision they are handling a large share of project activities, thus gaining experience that will help them in job searching later on.

Furthermore, Reduco Energo involved students from University of Osijek in actual project implementation. Professor Davor Kralik from the university engaged his students in conducting the research in Gundinci. Three students were trained in field research and biogas technology and this was included as part of their grade. The students joined the Reduco Energo team in conducting the structured interviews in Gundinci municipality. Their contribution to the overall projects outcomes was significant, since they collected almost 1/3 of the total interviews.

The project was not an element in ongoing youth participation activities. However, young professionals from Reduco Energo did the majority of the workload in Gundinci. Since RES-coop-Croatia is an ongoing project, we hope to apply a similar approach at other locations, involving students from other universities to actively participate in conducting a Material Flow Analysis. Within the project UNDP will also organize a role-playing workshop for young people, where they will be asked to organize themselves in a fictive energy cooperative.

Project funding

The overall RES-coop-Croatia project is funded by UNDP and Heinrich Boell Stiftung Croatia. However, the project in Gundinci was entirely funded by startup money from Reduco Energo. The overall costs of conducting the study were low budget. The Reduco team relied on resources and help from the local community and universities. The locals realized the benefits of such a project for their community and decided to lend a helping hand. For instance, accommodation and food was provided by a local dairy farm. The students from University of Osijek were reimbursed through gaining extra credits in their class, training and practical experience. Therefore, the majority of the expenditures were made for transportation and this was around 300EUR in total. Another 100 EUR were spent for printing. Since UNDP and Reduco Energo formed a partnership, further expenses related to other studies in Croatia will be covered by UNDP. In the long term, Reduco Energo is planning to achieve sustainability of its business model through having a share in the renewable energy projects when they are realized.

Project's connections to national or international environment processes

The RES-coop-Croatia project addresses the focal themes of the International Climate Initiative by contributing to building a climate-friendly economy. Moreover, the project aims to help the Croatian government reaching the 2020 renewable energy production goals whilst decreasing greenhouse gases emissions. Moreover, this project aims to tackle the NIMBY problem associated with renewable energy projects. Through changing renewable energy project ownership – by organizing local communities into energy cooperatives – the project aims at dealing with the Not In My Backyard Problem associated with renewable energy. The biogas energy project in Gundinci goes further and addresses the Nitrates directive of the European Union (91/676/EEC) and its counterpart in Croatian law – “Pravilnik o dobroj poljoprivrednoj praksi u korištenju gnojiva” (NN 56/08). The Nitrates directive regulated nitrogen use in agriculture in order to prevent ground and surface water contamination. Croatian law mandates farmers not to exceed the proscribed amount of nitrogen applied on land and regulates the manure systems storage capacity and quality. Since the manure management systems in Gundinci are mostly non-compliant with this law, efforts to develop biogas systems contribute to solving this problem. Additional encouragement for the cooperative model comes from the United Nations, which has declared 2012 as the International Year of Cooperatives and Year of Sustainable Energy for All.

Project’s connections to national or international health processes

There were no direct connections between the RES-coop-Project and national or international health processes. However, the project in Gundinci municipality does create an effective strategy to decrease the amount of nutrients in local water bodies. Introducing a more effective manure management system does this. Nutrient contamination decreases local water quality through eutrophication. This is excessive growth of algae that consume the nutrients found in animal manure, which then excessively consume water oxygen, leading to animal species dying off. If drinking water is contaminated, human health might be endangered as well. The RES-coop-Project recognizes these threats, but does not deal with them directly.

Follow ups, outcomes and future plans

The RES-coop-Croatia project is ongoing and will last until end of 2013. UNDP’s goal is to pilot three energy cooperatives, which would lead to their actual establishment. In addition, the project will add to the current body of knowledge by publishing a manual on setting up energy cooperatives in Croatia. Currently UNDP is applying as consortium partners for Intelligent Energy Europe funds, in project applications related to citizen lead energy investments. And should this happen, energy cooperatives will also be a focal point until 2016. Regarding the work in Gundinci municipality, a workshop with the local farmers and the municipal mayor will be organized within the RES-coop-Croatia project. This workshop will serve as the starting point of developing an actual energy cooperative. The farmers will be given a letter of intent, explaining the project and offered to apply for cooperative membership. The Croatian law mandates at least seven cooperative members and should the local interest comply or exceed this regulation, an energy cooperative will be formed. If this happens Reduco Energo will continue with the process of developing the actual biogas plant. Within the RES-coop-Croatia project, a web site will be created which will consist of all relevant news and information on project activities. UNDP, as a recognizable institution will assure high visibility of the project. The Gundinci project could be replicated throughout Croatia as there are huge potentials and needs for sustainable development of renewable energy sources. Within the project, young people working on project will share cooperatives values such as democracy, transparency and unification.