NEWSLETTER

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ENERGY AND BIOMASS

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This project is funded by the European Union

Guvernul Republicii Moldova

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49 new biomass heating systems, including 20 solar collectors, will be installed in 2017 using the European funds of the Energy and Biomass Project

49 new biomass heating systems, including 20 solar collectors, will be installed in 2017 using the European funds of the Energy and Biomass Project. As well, 27 kindergartens – beneficiaries of the first phase of the project – will be equipped with solar water heaters that will operate in conjunction with the biomass heating system. 34 schools and kindergartens with straw bale-fired heating plants will be additionally equipped with tractors for bale transportation and loading in the boiler. These are the plans for 2017 of the Energy and Biomass Project, presented at the Project Board meeting held on 17th of January at the Ministry of Economy. The project is funded by the European Union and implemented by the United Nations Development Programme.

A system for remote monitoring of the operation of biomass heating plants, beneficiaries of the Energy and Biomass Project, will be launched in 2017. This year, the Training Centre for Biomass Boilers Operators will start the provision of training courses. Feasibility studies will be conducted in two districts (Rezina and Cimislia) selected as pilot-sites for biofuel production from vegetable waste and, depending on their findings, the first municipal projects for utilisation of the vegetable waste for energy purposes will be launched.

2017 is the final year of implementation of the Energy and Biomass Project. Launched in 2011, the project has gone through two stages of implementation thanks to the funds disbursed by the European Union. The project succeeded to connect more than 190 schools,

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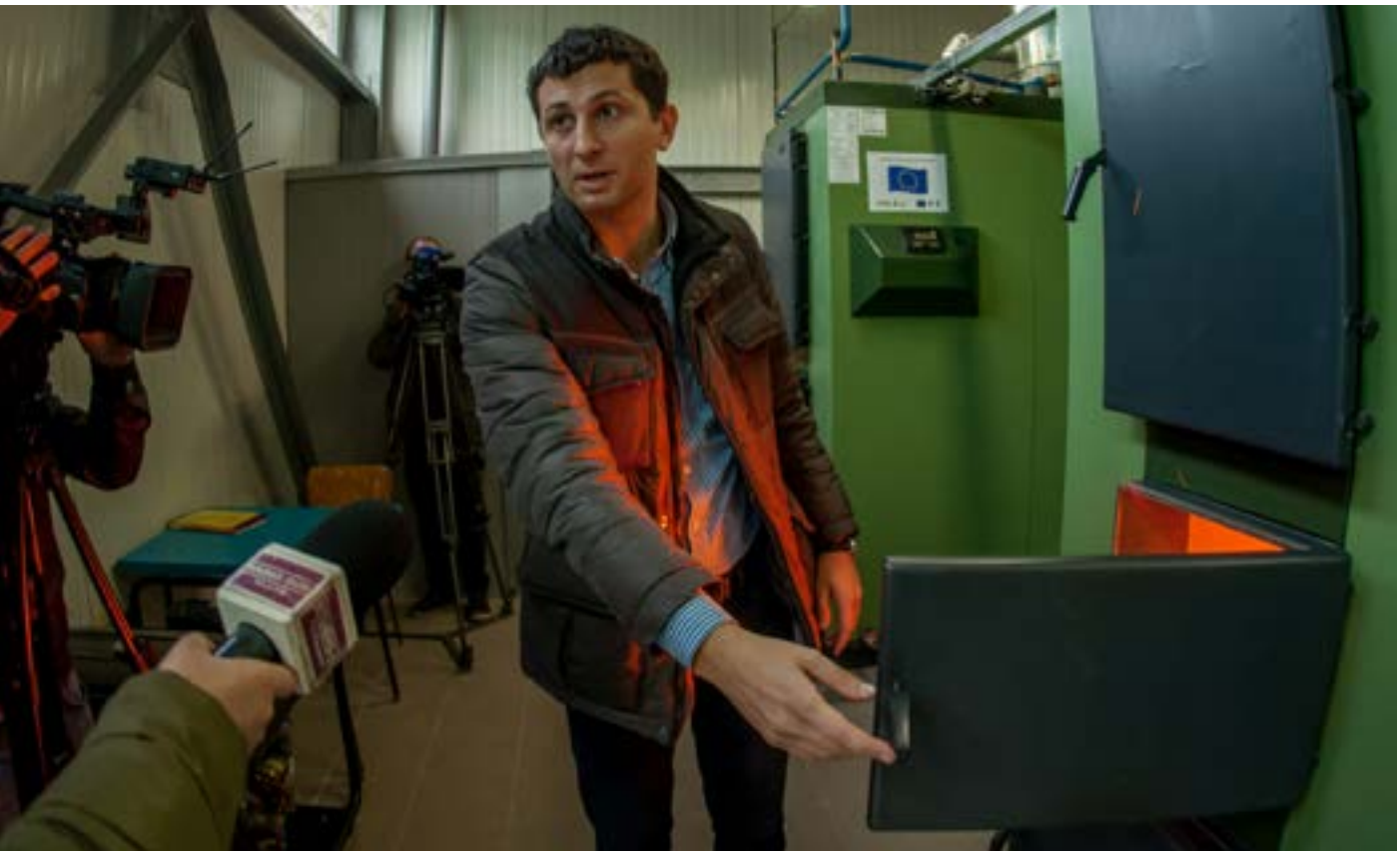

kindergartens, community centres, hospitals to biomass heating systems, thus ensuring the access of a total number of over 140,000 people to safe energy produced in the Republic of Moldova. The Energy and Biomass Project laid the foundation for the bioenergy sector development in the Republic of Moldova that was, six years ago, at the starting line. The number of institutions consuming bioenergy led to the increase of the number of companies in briquette and pellet production sector, their total number being estimated at 100. 30 new companies in the bioenergy sector were set up due to the attractive leasing mechanisms developed by the Energy and Biomass Project, using the European funds. 1,000 families heat their houses with green energy thanks to subsidies of up to 1 300 EURO granted from the European funds.

Project's experts provided trainings to over 5,000 beneficiaries: mayors, managers of public institutions, agricultural entrepreneurs, operators of biomass heating plants, biofuel producers. 372 schools, with more than 21,000 students, joined the educational initiative that promotes the renewable energy and energy efficiency.

For more information about the Energy and Biomass Project, see www.biomasa.md website and Energie din Biomasă Facebook page.

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Learn more about renewable energy at the Energy and Biomass Project's stand at Moldenergy exhibition

The Energy and Biomass Project looks forward to meeting you at the specialized Moldenergy exhibition to be held on March 22-26. The project will share a stand with the Energy Efficiency Agency, where visitors will be able to find information about the activities carried out in promoting renewable energy sources and energy efficiency, business opportunities and public policies in this area.

The project will organize a series of meetings with experts in each sector of renewable energy, who will answer the questions asked by the visitors. The questions may be sent in advance to ina.zglavuta@undp.org or via our Facebook page, where the agenda of public presentations will also be announced.

The Energy Efficiency Agency will present for the first time the wind energy map, the solar energy potential map, and the map of biomass potential in Moldova.

The shared stand will be divided accordingly into three sections dedicated to the three sources of renewable energy.

This year's exhibition will present new technologies available on the market in the field of electricity and heating, gas supply, insulation materials, ventilation and air conditioning, lighting, eco-technologies, "smart home" systems etc.

For the first time, the exhibition will have an "area of energy efficiency" – a special platform to connect energy efficiency equipment suppliers with interested consumers.

The exhibition's business program will include master-classes, round tables, presentations of energy efficiency innovations and networking events.

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Anenii Noi district council is looking for a private partner to install biomass heating systems in the district's public institutions

Anenii Noi District Council has announced a contest to select the private partner to install biomass heating systems and supply heat in a number of public institutions in the district under a public private partnership (PPP) for a period of 10 years. The contest notice was published in the Official Gazette (Monitorul Oficial) on February 17, while the bids can be submitted until April 17.

According to a feasibility study conducted earlier, there are several heating plants in Moldova operating based on fossil fuel, such as coal or natural gas, the term of operation of which will expire in the near future and which will thus require refurbishment investment. This is an opportunity to replace these district heating plants with biomass heating systems, to be served in different regions by a single supplier of solid biofuel. A first PPP model was launched in 2014 in Leova district, where 19 educational institutions are now heated in a centralized manner, thus avoiding technical problems related to the rehabilitation of old plants and the growing cost of fossil fuel. The private company selected based on a contest organized by the district council installed modern pellet based boilers in the district of Leova in 2014, the investment amounting to 500,000 Euros.

In August 2016 a contest aimed at establishing a Public-Private Partnership in Ungheni district was announced. According to the technical specifications, the private partner is to rehabilitate 5 heating plants and install two pellet burning boilers in two public institutions in the district, as well as supply heat during the next 10 years. The company will also implement energy efficiency measures in five public institutions, financed by the Energy and Biomass Project, and supply biomass heating during the term of the PPP contract.

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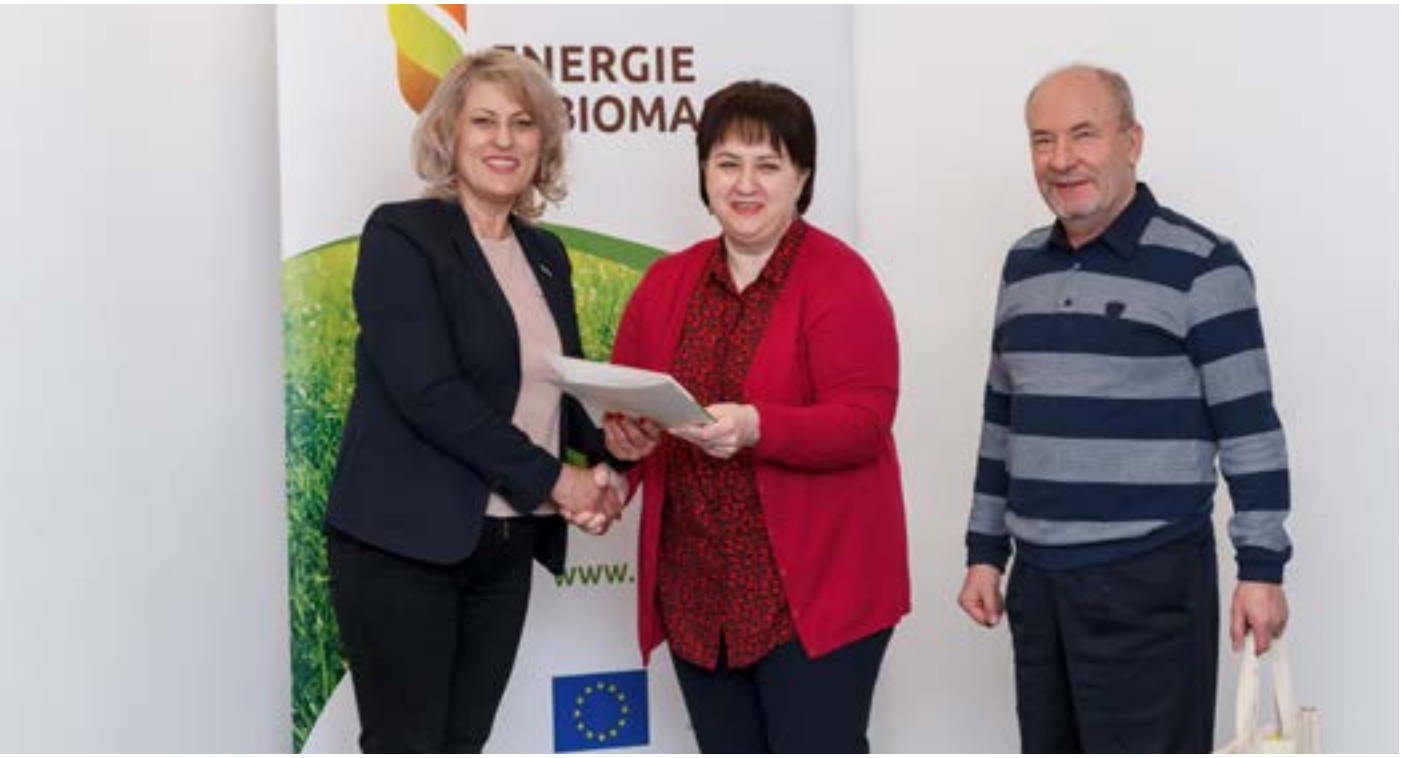
In total, the Energy and Biomass Project aims to support 10 districts in developing PPP models in the provision of energy supply services. It was the first of the 10 contests announced by the districts selected for the implementation of PPPs in biomass heat supply. Thus, the Project will allocate 100 thousand dollars from European funds to the administration of 10 districts of Moldova, in order to establish public-private partnerships so as to address, among others, the issue of fuel quality, service sustainability and energy security of beneficiary communities/institutions, as well as to contribute to local development by creating new jobs and increasing contributions to local budgets.

The selected districts are Taraclia, Riscani, Ungheni, Donduseni, UTAG, Anenii Noi, Orhei, Nisporeni, Telenesti and Leova. To qualify for a grant of USD 100 thousand, the district administrations will have to select the private partners responsible for project implementation, based on contest.

12.000 more people will enjoy clean energy



15 mayoralties have signed memoranda of cooperation for the installation of biomass heating systems and solar collectors in 20 institutions (6 kindergartens benefiting from solar collectors). Starting next winter more than 12,000 people will enjoy clean energy. The investment in new systems will amount to about 700,000 Euros and will be financed from European funds. In turn, communities will come with a total contribution of about 200,000 Euro. The list of communities that have signed memoranda of cooperation: v. Enichioi (d. Cantemir), v. Taraclia (d. Causeni), v. Tarnova (d. Edinet), v. Falestii Noi (d. Falesti), v. Gvozdova (d. Floreşti), v. Ciuciulea (d. Glodeni), v. Cobani (d. Glodeni), v. Obileni (d. Hincesti), v. Cneazevca (d. Leova), v. Mateuti (d. Rezina), v. Chiscareni (d. Sangerei), v. Sangereii Noi (d. Sângerei), v. Buciumeni (d. Ungheni), v. Busila (d. Ungheni).

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The largest producer of renewable energy in Moldova will install the third biogas cogeneration plant in Drochia

The sugar producer Südzucker–Moldova has invested one million Euros in the construction of a new biogas power cogeneration plant, with the works completed in February this year. Once the third plant is put into operation, the total volume of electricity production will amount to 3.6 MW/h.

The plant runs on biogas derived from the vinasse obtained in sugar beet processing. Put into operation in 2013, the biogas plant has an annual processing capacity of over 7 million cubic meters of biogas with a content of 51% of methane.

The secondary waste resulting from the operation of the biogas plant – a substrate, is a highly efficient organic fertilizer to be used on the company's fields.

The Energy and Biomass Project has provided financial support to the company in developing the feasibility study for the biogas plant.

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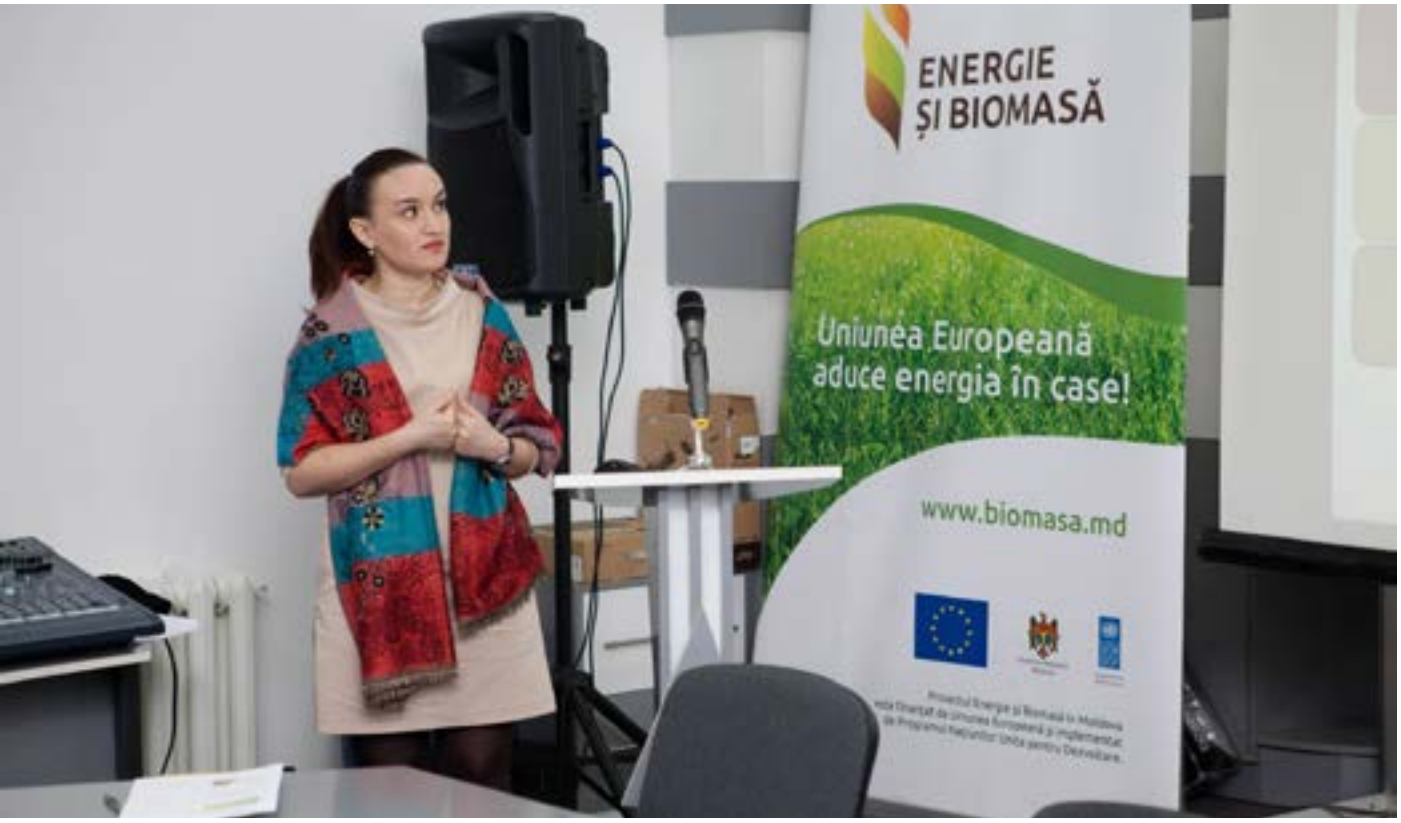
Green energy made in Moldova



The trends and opportunities in the implementation of renewable energy projects were discussed at the workshop "The local market of heating systems and systems for preparation of hot water using renewable energy sources." The workshop was held within Made in Moldova exhibition, and was organized on February 3 jointly by the Energy Efficiency Agency and the Energy and Biomass Project, funded by the European Union and implemented by the United Nations Development Programme.

During the event, examples of sustainable projects and investments in the use of combined systems for production of heat from biomass and domestic hot water from solar energy were presented. The representatives of national authorities, experts of the Energy Efficiency Agency and the Energy and Biomass Project, and the first users of combined heat plants, engineers and representatives of companies providing maintenance services presented relevant information about new green technologies.

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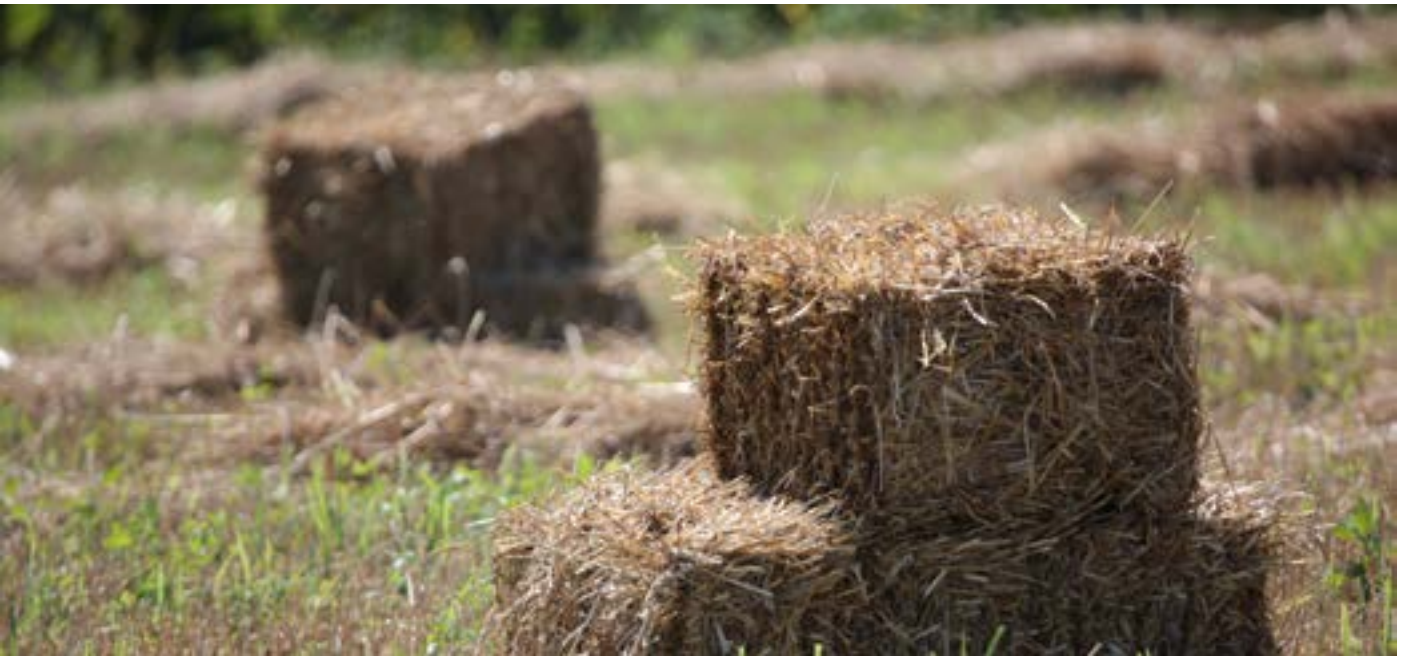
The agricultural excellence center in Taul will produce heat from its own biofuel



The Centre of Excellence in Horticulture and Agricultural Technologies in Taul will produce its own biofuel for indoor heating. A contest has been announced to select a company to install a heating plant and a biofuel production line, due to the fact that the institution has its own raw materials from agricultural waste and energy crops.

The Centre of Excellence in Horticulture and Agricultural Technologies in Taul has 400 hectares of agricultural land on which it grows wheat, barley, sunflower, soy, etc., and from which it collects raw materials for biofuels – agricultural waste. The student hostel of the Agricultural College has been heated with straw bales since 2013. "Heating with baled straw is very cost efficient, the savings amounting to 2.5 times compared to the natural gas. New jobs have also been created, as plant operators, people who bale straw," says Aurel Serdesniuc, director of the institution.

With the financial support of the Energy and Biomass Project, the College will purchase a biomass burning boiler with a capacity of 75 kW to provide the heat required for the existing greenhouses. Thus, the project contributes to the sustained use of biomass both in the daily life of the institution and in the educational process.

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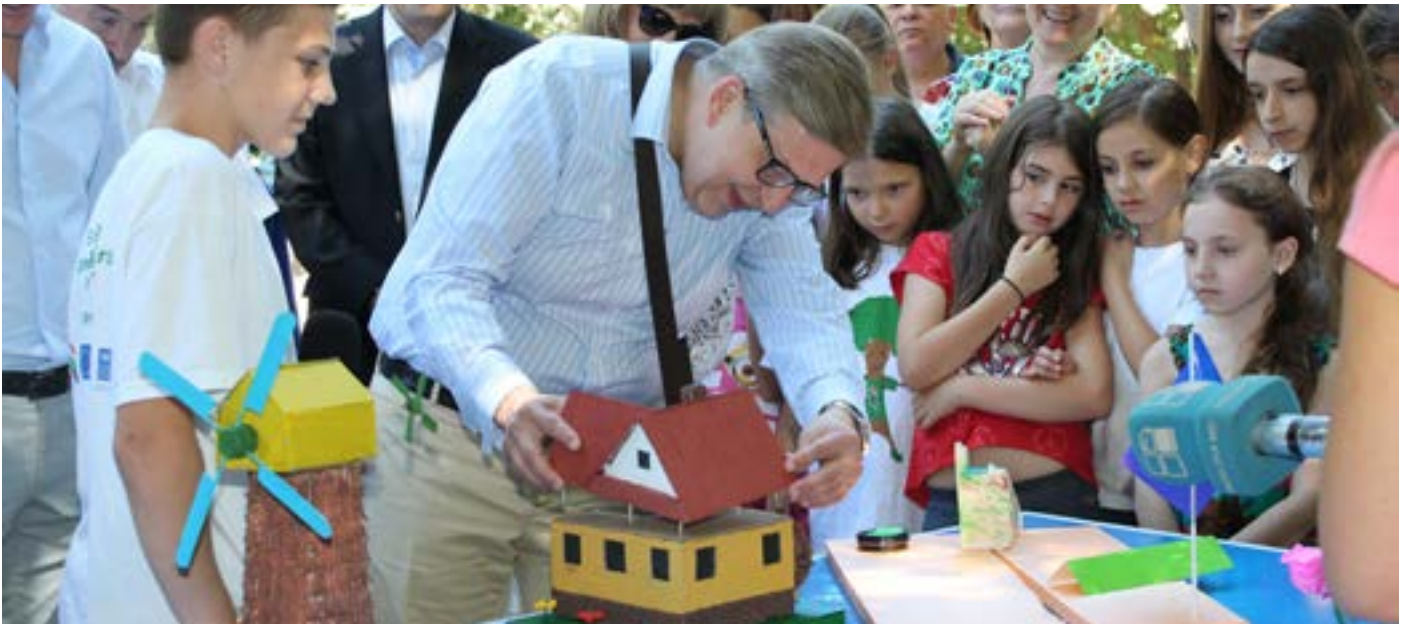
1800 more students will study renewable energy in schools due to the initiative launched by the Energy and Biomass Project



1,800 students from 70 schools in Moldova attend the training course in Renewable Energy Sources as part of the educational initiative launched by the Energy and Biomass Project.

Children and teachers participate in webinars led by bioenergy experts on various topics related to RES and EE; discussion clubs; site visits to heat plants operating based on biomass, installed in public institutions with the support of the Energy and Biomass Project; presentations to community leaders about the benefits of the locally produced green energy; preparation and distribution of leaflets with messages promoting green energy in the society and among community members; development of model facilities representing alternative energy production plants (biomass boiler models, hydropower plants, wind turbines, solar panels etc.)

The educational initiative was launched in 2011 in schools in 127 communities benefiting from the project, which have installed biomass heating plants with the support from European funds. Subsequently, a total of 225 schools with over 13,000 students in grades VII and VIII across the country have joined the educational initiative. Thus, since the beginning of the project, 372 schools have become part of the educational initiative to promote renewable energy and energy efficiency, more than 21,000 students studying this course in schools.

The Energy and Biomass Project has also supported the development/printing of the "Renewable Energy Sources" handbook for students in VII and VIII grades and a guide for teachers, which contains detailed lesson plans on each topic covered in the manual and ideas for active learning activities (experiments, demonstrations, field trips, topics for discussions, presentations), in order for the children to better understand the concepts of RES and EE.

After the piloting and acceptance of educational materials by students and teachers in 2013, the "Renewable Energy Sources" subject was introduced in the list of optional subjects for students in grades V – IX, and in 2015, the course was included in the National curriculum for optional training courses.

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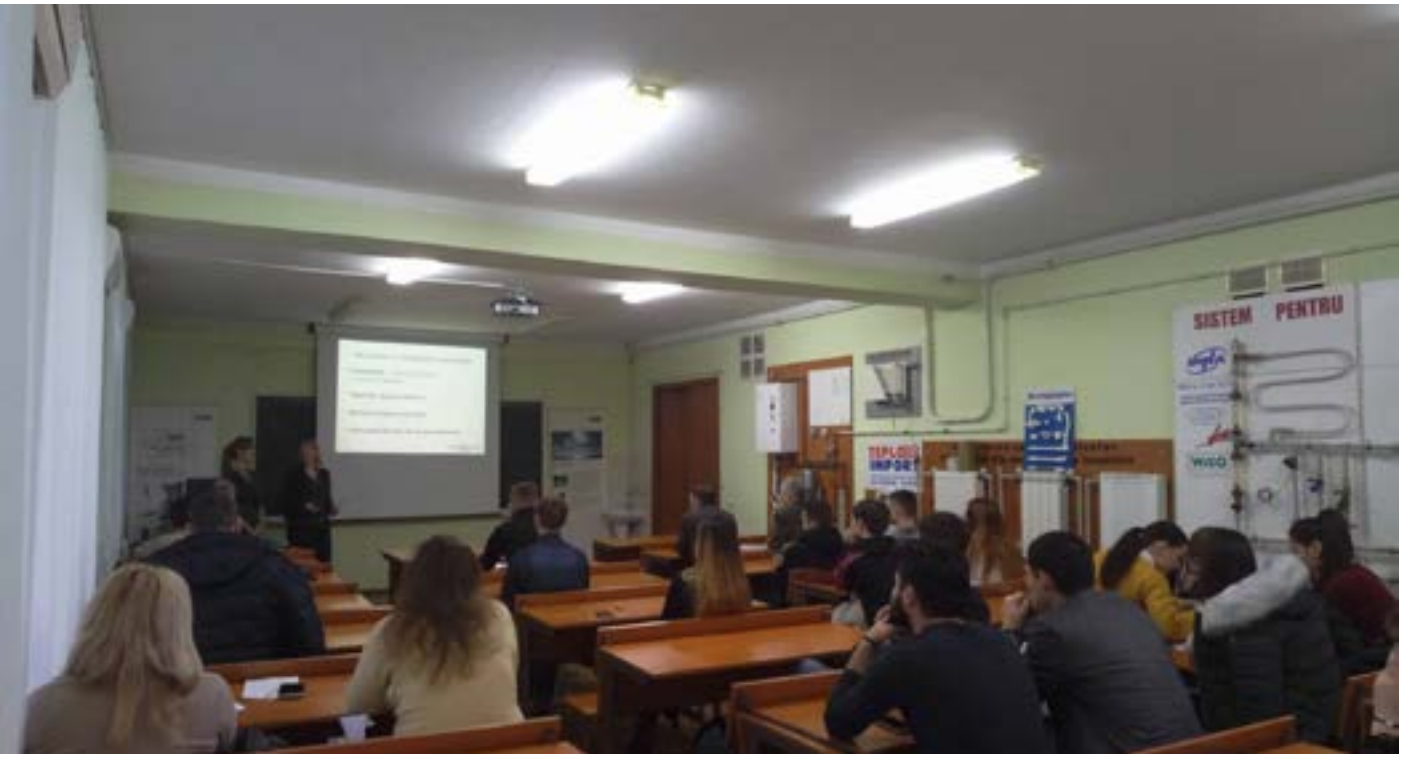
The best practices in the choice, sizing and installation of biomass heating systems shared by Norsk Energi experts in Chișinău



On February 6-9, companies specialized in biomass plants installation, service companies and system engineers, as well as students of the Technical University, Centre for Construction Excellence and the College of Technology of Moldova attended a specialized training on best practices in choosing boilers and the type of biofuel, in the sizing and installation thereof, as well as on the advantages and disadvantages in terms of capital and operating expenses.

The workshop was facilitated by the experts from the Norwegian company Norsk Energi with the support of the Energy and Biomass Project, funded by the European Union and implemented by the United Nations Development Programme.

According to Norwegians experts, the design of the plant and its capacity depend not only on the type and size of the building, but also on a number of its technical parameters. Thus, for instance, schools imply the availability of large, crowded rooms, hospitals – smaller rooms, with less people per square meter, this particularity also depending on the amount of heat released by the human body in heated spaces. At the same time, older buildings with poor thermal insulation need about 100-200 W/m2, while a proper insulation reduces the consumption to about 30 W/m2. Old radiators require water temperature of 80-60 degrees Celsius, modern convectors and radiators - 60-40 ^{o}C and the buildings with underfloor heating - just 40-25^{o}C.

For the heating of several neighboring buildings, Norwegian experts recommend operating a district heating system, a larger number of consumers connected to the same network implying a lower capacity of the

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heating plant in relation to the theoretical maximum of the heat flow. This applies to both domestic hot water use and to heating appliances, since the basic rule of a centralized heating system is that more than 80% of consumers will be connected concurrently.

Moldovan experts have analyzed the benefits, the particularities of sizing and installation of heat expansion tanks and hot water tanks. Use of the tank hot water ensures both operation at a constant capacity of the boiler and constant water consumption during peak hours, in the morning and in the evening, and in the summer it can provide for the hot water needs for a few days with only 6 hours of boiler operation. In addition, a system of solar collectors can heat water, which will be kept warm for the rainy days.

The size of the heating system components is equally important for its effective functioning. A too large capacity means loss of energy and a longer waiting time for hot water by the consumer, while a too little capacity will generate energy loss from friction and excessive consumption by pumps.

Norwegian experts have exemplified the details of a proper sizing of the components of various types of biomass heating systems, location of the boiler, advantages of the centralized heating system and its design, as well as relevant European standards.

Students exchange knowledge about energy plants

The students of vocational schools in Orhei, Cuhureştii de Sus and the Theoretical Agricultural High School, who have been studying the "Energy crops" in this academic year, organized a scientific conference entitled "Energy potential crops – renewable energy sources."

The students made presentations about the biological particularities, the technology and management of the growth of energy willow, hybrid poplar and energy acacia, Paulownia, common cane, Chinese reed or elephant grass and the Jerusalem artichokes.

PURE DROP

The sugar producer Sudzucker is the largest producer of renewable energy in Moldova. The biogas heating plant in Drochia has a co-generation capacity of 3.6 MW/h.

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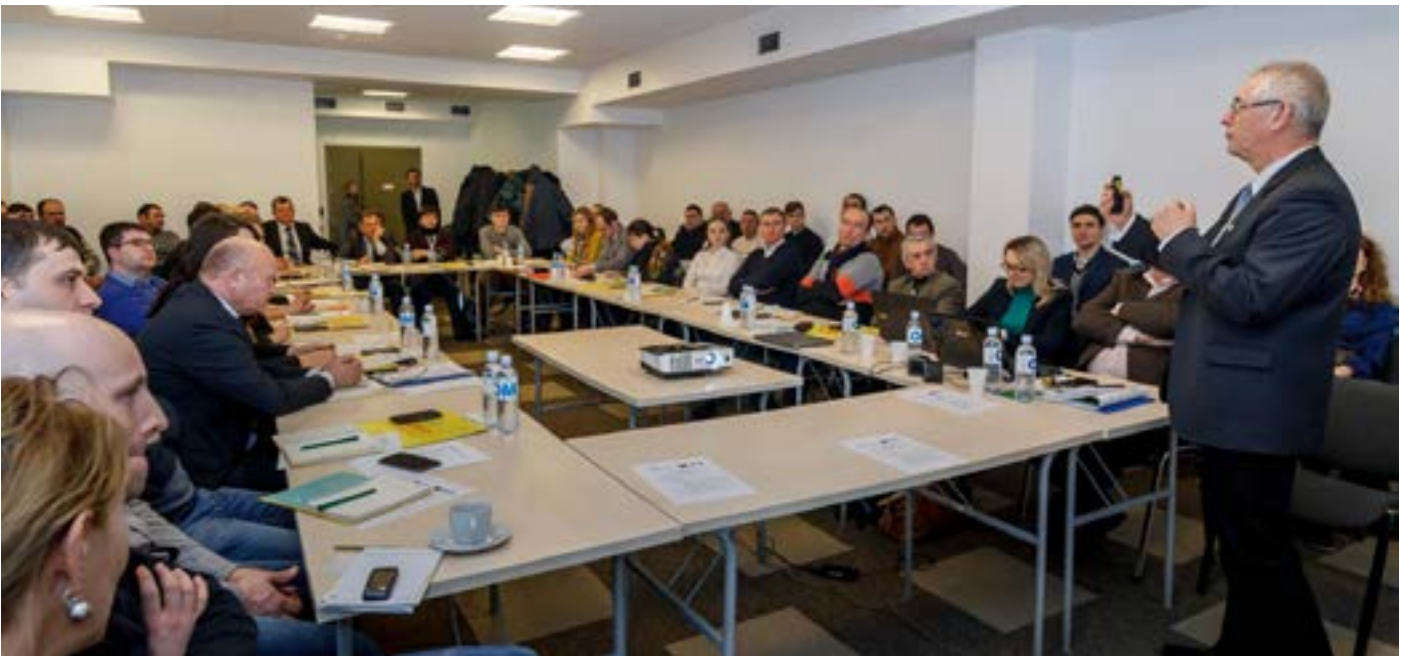
The main players on the biomass fuel market will build a cluster



A solid biofuel energy cluster will be built in Moldova with the support of Energy and Biomass Project. The cluster will provide a framework for cooperation between key players in the biofuel market, including companies, research institutions, universities, public authorities and institutions as a catalyst for economic growth and will help create local, regional and international partnerships in the field.

„The need for clusters comes at a certain degree of market maturity, to ensure continued growth and overcome the bottlenecks related to lack of interaction between companies, between companies and research or educational institutions, donors or public authorities, says Lajos Vajda, President of the Bioenergy Innovation cluster „Green Energy" in Romania. He moderated a meeting with all stakeholders on the biofuel market, where the landmarks of the procedure for building and operating a cluster were discussed.

Typically, the clusters have no legal personality and are managed by an association of biofuel producers, which in turn is a legal entity. Besides administering the cluster, the Association, together with the companies operating in the field, identifies the problems faced by the sector and establishes the priorities of cluster's activity based on their impact on the sector. The role of academia is to provide innovations and new or improved technologies that can be used by private actors in the sector, while public administration, in addition to its role as beneficiary and consumer of bioenergy, will provide incentives to cluster member companies. All these activities aim at developing the market, with its major elements – competitiveness, quality products, and strong brands.

The cluster management organization, either an association or a private company, will provide management personnel, a database, the sector development strategy etc. The management of the cluster can be based in incubators or business centers, industrial parks, research institutions or universities, or Chambers of Commerce and Industry. The close links with such institutions can help create new opportunities, both in terms of sales and the level of uptake of innovations, says Lajos Vajda. According to him, a cluster is a more complex entity than the association, having responsibilities for the integration of research outputs, new technologies, development of brands and the market, while an association

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deals with finding solutions to common problems of its members in terms of biomass production and its use.

In Romania, the Biomass Innovation Cluster „Green Energy" was established in 2009 by 14 founding members, their number subsequently increasing to 25. The Cluster activities include members' representation, provision of advisory services, professional training, exchange of experience, organization of production and use of biomass (production, equipment, storage, and recovery), attracting funding sources and implementation of information and awareness campaigns on the biofuel. According to Vajda, Moldova has the required critical mass for building a cluster, since the main players are present in the market, but it is important to identify a reliable leader in the sector, which will lead the process of establishing the producer association and the cluster. In the opinion of the university professor Victor Donea, the openness of the public authorities responsible for economic development, environment, employment, agriculture, etc. is very important for building the cluster.

„The law on renewable energy sources has been approved, but the secondary legislation is still in the process of development. This is a bottleneck for the development of the private market, with the economic operators, in particular those in the biomass industry, lacking any culture of association. In addition, the fuel from biomass is not used systemically. There are public institutions scattered in various districts, but local authorities do not integrate the biofuel in the public settlements' heating systems. This would allow economies of scale and development of sound producers of biomass. The involvement of public local authorities is important for this reason, but also for integration of the biomass collection in the municipal waste collection system," said Mariana Rufa, executive director of the European Business Association.

According to Vladimir Bragaru, one of the pioneers of energy willow cultivation in Moldova, the documents establishing the Association of biofuel producers have been developed and its registration with the Ministry of Justice is now pending. Meanwhile, the Agreement establishing the Biomass Cluster is to be circulated and approved.

Victor Cotruță, manager of the Energy and Biomass Project in Moldova, announced during the public consultations among key market players, that the project would provide financial and logistical support for building both the Association and the Cluster. He stressed, however, that the association initiative must come from producers. During the meeting, several biofuel producers have complained about the high price of raw materials, which account for about 80% of the final cost of pellets and briquettes and expressed hope that the creation of associations and the cluster would

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contribute to a better coordination between biofuel producers and the farmers. Also, distances between producers and consumers of biofuels reduce the competitiveness of the business. „There are schools in Briceni district buying biofuel from producers in Cahul district, says Valeriu Chiciuc, representative of Eco Power SRL. Because of the lowest price principle applied in public procurement procedures, we are witnessing such market disorders, when high transportation costs are influencing the quality of biofuel. If the process of collection of raw material, processing and production of biofuel was organized at the regional level, up to three districts, the cost would decrease significantly", says Valeriu Chiciuc.

In turn, the secretary of Anenii Noi District Council, Peter Boicu, said the demand for biomass fuel had increased after installation of heating plants operated with solid biofuel in public institutions. However, because of the high operating costs and high demand, the manufacturers have to sacrifice the quality of the biofuel. The cluster has the potential to solve this problem, believes Peter Boicu.

Another issue to be addressed is the unlawful cutting of forests for firewood. According to the Professor Valentin Arion, as long as cheap firewood is available on the market from illegal cutting of forests, the rural population will not be interested in using advanced heat generation technologies based on pellets or briquettes and will continue to heat their dwellings with traditional stoves with low thermal efficiency.

According to Vladimir Bragaru, even if the cost of a Gcal generated with biofuel is higher than the one generated by natural gas, the money remains in the country on the whole value chain, and contributes to the growth of Moldova's Gross Domestic Product.

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The opinions expressed in this publication do not necessarily reflect the views of the European Union and UNDP.

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