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DEVELOPMENT**

Enterprise Energy Efficiency (3E)

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BROCHURE 20 EE TIPS

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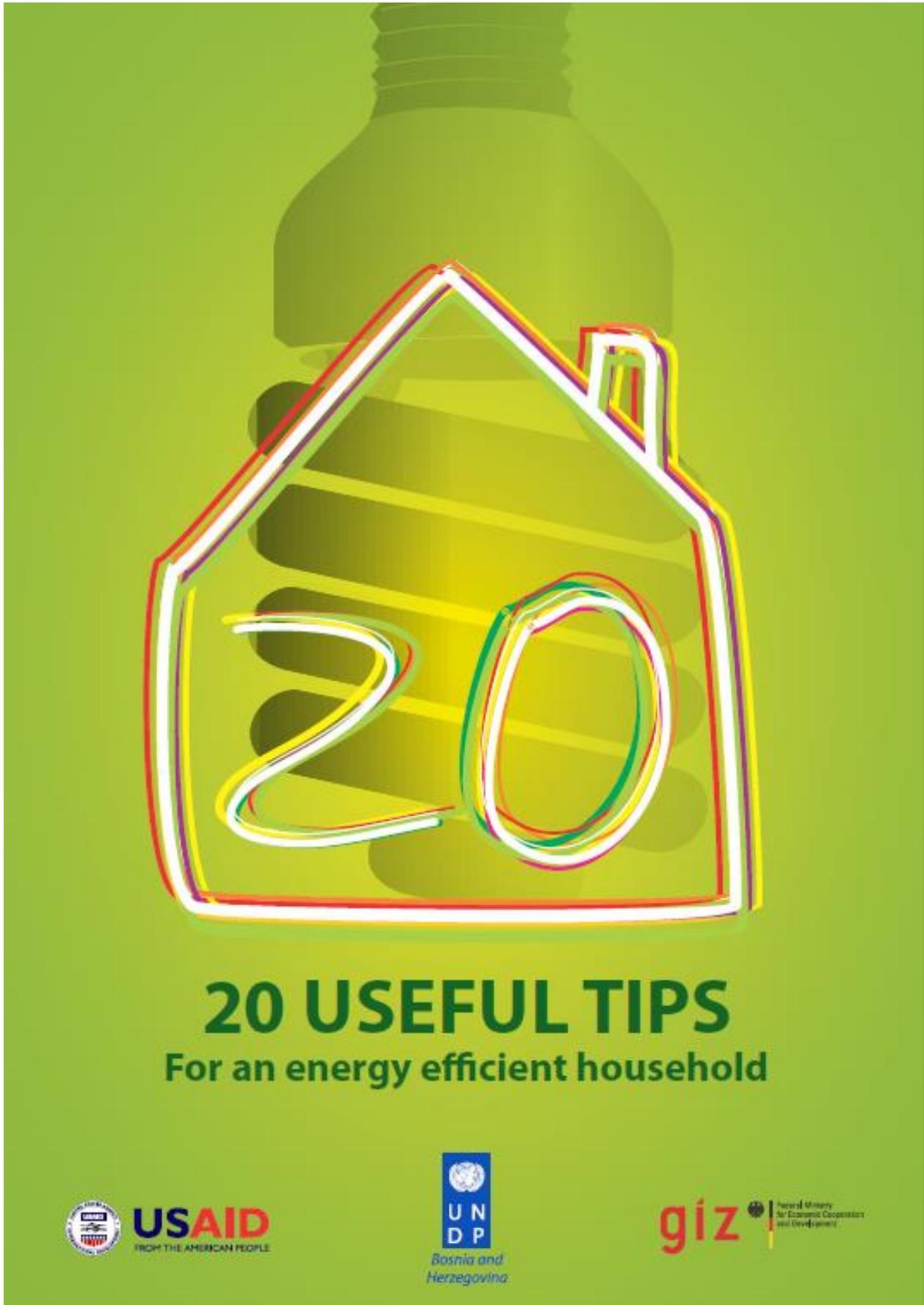
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THERMAL INSULATION OF THE BUILDING

1

Thermal insulation is the basis of a building's energy efficiency. By insulating the roof, walls and cellar, the heat loss during winter is substantially reduced; and overheating of the building in summer is avoided. At the same time, the insulation protects the building from adverse weather conditions, increasing its longevity. The savings on heating energy of the insulated building is up to 70%.



Insulation of the roof or ceiling in the attic: 20-25 cm of insulation (i.e.: URSA SF 35)

Insulation of the outside wall: 12-16 cm of insulation (i.e.: URSA XPS contact façade or URSA FDP 2/V ventilated façade)

Insulation of the floor towards the ground: 10-14 cm of insulation (i.e.: URSA XPS or URSA TSP)

REDUCE HEAT LOSS THROUGH WINDOWS

2



Windows or doors that are poorly sealed are the main cause of heat loss. Nearly 70% of a building's energy is lost through poorly sealed windows or doors. You can reduce the loss by installing windows with iso-glass and low-e coating or by putting special foil on the glass, and by using insulation sealing tape around the windows and insulating the boxes for roller blinds. By replacing old windows with new ones that have double or triple glass with at least 16 mm of air between them, the heat loss can be reduced two or three fold.

For example: Window system REHAU GENE0® from High-tech materials RAUFIPRO®



3

HEATING OF ROOMS

Heating bills comprise up to 34 of the cost of energy. If the temperature in the room is reduced by only 1°C, you can annually save up to 3-5% of the energy used for heating. Special attention should be paid to the heating elements, like radiators – don't put them behind furniture or curtains, and especially don't put clothes on them; rather use a collapsible laundry rack that can be placed anywhere in a room or in the bathroom. Wear suitable clothes while in the room, depending on the season, i.e., don't wear summer clothes during winter to avoid overheating the room. Install a room thermostat which can reduce heating costs by 7 to 15%, and by installing thermostatic radiator valves by 20%.



Example: Danfoss valve with prerregulation RA-N offers larger savings because of hydraulic hydro-balance



Example: Danfoss ECL Comfort 110 – regulation set by outside temperature



Example: Danfoss gas thermostatic head RA-2990, allows savings up to 20%



Example: HERZ thermostatic valves 7000 and 9000 series.



Example: Siemens – digital thermostatic valves for rooms



Example: Siemens – standard and wireless thermostatic valves with touch sensitive screens



Example: Siemens – Calorimeter for heating/cooling

4

ROOM VENTILATION

When ventilating rooms with fresh air, make sure that this does not last long and certainly not longer than a couple of minutes so that neither the air nor the walls in the space get overcooled, as warming them up would unnecessarily use additional energy. For example the VAILLANT recoVAIR ventilation system, that represents an efficient additional system that transfers the thermal energy of the used air to the fresh air supply through a heat exchanger. In this way the air in the room is always fresh.



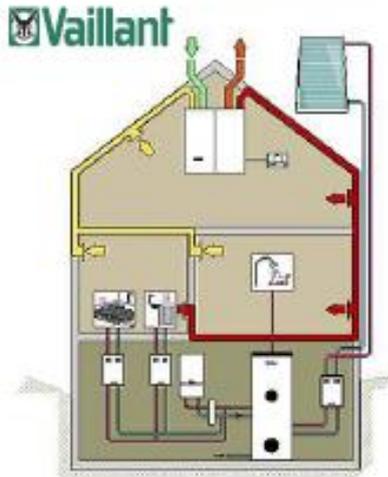
HOT WATER PREPARATION

5

About 20% of the annual thermal energy is spent on the preparation of hot water. By replacing an electric boiler with a solar system or combined system that uses solar technology, you can annually save up to 800-900 KM. The investment into such a solar system is usually returned within 5 to 7 years.



VAILLANT thermoSYPHON



Vaillant

Danfoss

DANFOSS individual residential heating substation for preparation of hot water and heating with connection to main heating source (central heating plant or boiler room)



USE WATER SAVING TOILET FLUSHING SYSTEMS

6

Since almost one third of the daily consumed water goes directly into the sewage through toilet flushing, it is recommended that a water saving toilet flushing system be installed. The classic flushing systems use 10-14 liters, while the water saving ones flush with either 3.6 or 9 liters of water.

USE CLASS "A" ENERGY EFFICIENCY APPLIANCES

7



Energy class "A" lighting appliances use up to 45% less energy than the same class "D" appliances. Because of this, we recommend the purchase of class "A" appliances and higher. Also, when purchasing, make sure that the capacities of the appliances are adjusted to the real needs of your household.

DON'T LEAVE THE TV IN STANDBY MODE

8



Appliances such as television sets, which have a standby mode option, should be switched off when not being used, as they use energy even in standby mode. A standby mode uses up to 25% of energy in comparison to the energy used when the appliance is switched on.



9

DON'T LEAVE THE MOBILE CHARGERS IN ELECTRICITY SOCKETS

Chargers for mobile appliances, such as mobile phones, should not be left in electricity sockets after charging, as they unnecessarily use energy.



10

USE ECONOMIC LIGHT BULBS AND MOVEMENT SENSORS

Economic light bulbs use five times less energy than normal ones, and they also last up to eight times longer. Apart from the economic light bulbs that you install in the rooms that you usually use the most, in those rooms that you don't spend a lot of time, like halls, garage or gardens, install movement sensors that ensure that the light is only turned on when needed.

ZARULJA SA ZARNOM NITI	Snaga	Snaga	STEDNA (FLURO-KOMPAKTNA) ZARULJA
 NE	25 W	5 W	 DA
	40 W	7 W	
	60 W	11 W	
	75 W	15 W	
	100 W	20 W	
	120 W	23 W	

→

OSRAM




11

USE DISHWASHERS AND WASHING MACHINES



Did you know that by hand washing the dishes you use up to 80% more water than by washing them in the dishwasher? If you are washing the dishes by hand, don't let the water run constantly, but rather fill the sink or a dishpan in which you will wash the dishes. In the last 10 years washing machines have reduced the amount of water used for one wash from 110 l to 50-60 l, and the power usage was reduced from 2 kWh to 0.94 kWh. How old are your machines? Additional energy will be saved if the machine is directly connected to the hot water fitting.

12

SAVE WATER BY USING ATOMISERS OR AERATORS



The atomizer on the tap or the shower head with an aeration net can reduce your every day water consumption. Make sure that the taps are not leaking, as even if only one drop is lost every second, a significant loss of energy and water will occur. The waste of energy and water is enough for 16 showers a month. Using the shower head with an aerator along with reducing the average shower time from 9 to 7 minutes, will save around 41.000 liters of water annually.



16

HOW TO COOL THE ROOMS

Cooling rooms in summer to temperatures that are too low is not energy efficient and not healthy. The difference between the outside and the inside temperature should not be higher than 7 °C. Adjust the temperature on the regulators to 25-26 °C. For each °C lower, 3-5% more energy is consumed. While the A/C is on, do not open the windows unnecessarily and if it is not necessary, try to avoid using heat sources in the area, such as lighting or household appliances. Ventilate the area from time to time, but make sure you switch off the A/C unit while you ventilate the area.



PROMO Yard House – low energy portable house built in 2009 in Kristianstad, Sweden; consumes only 53 kWh/m² for heating or cooling.

17

DAILY HOUSEWORK PRACTICES

Careful energy use during daily housework can prevent unnecessary energy use. While cooking on electric stoves, do not put pots on the heating elements that are wider than the pot's radius; or if cooking on a gas cooker, adjust the width of the gas burner so it heats the pot's bottom only and not its sides. While cooking, cover the pots so the heat is kept within the cooking pot.

18

USING THE REFRIGERATOR

To avoid keeping the fridge door open unnecessarily, don't open the refrigerator unless you are certain which food you would like to take out from the refrigerator. Don't keep the refrigerator too close to the wall, as it needs an uninterrupted air flow behind the fridge to work properly. Pay special attention that the refrigerator is not too close to the stove, radiator or boiler, or other heat sources. The capacity of the fridge should be adjusted to your needs.

19

RENEWABLE ENERGY SOURCES – HEATING USING WOOD AND BIOMASS

Preporučljivo je zamijeniti stari kotao na lož ulje kotlom na drva ili biomasu. Cijena biomase je povoljnija od cijene lož ulja i do dva puta. Biomasa je obnovljivi izvor energije koji uključuje ogrjevno drvo, grane i drvni otpad iz šuma, piljevinu, koru i druge ostatke iz drvne industrije, kao i slamu, kukuruzovinu, stabljike suncokreta, ostatke pri obrezivanju vinove loze i maslina, košpice višanja i maslina te ostatke iz stočarstva. Specijalnim tehnološkim postupkom prešanja pod visokim pritiskom proizvode se peleti – biogorivo za automatizirana kotlovska postrojenja s tehnikom izgaranja uz otplinavanje biomase.

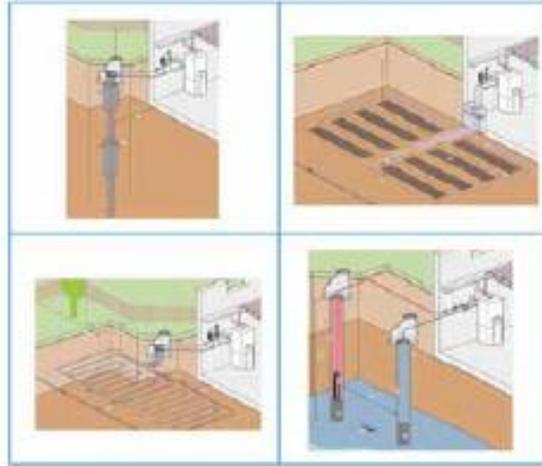


Example: Pellestar Biocontroll 3000



RENEWABLE ENERGY SOURCES – HEAT PUMPS AND THERMO SOLAR

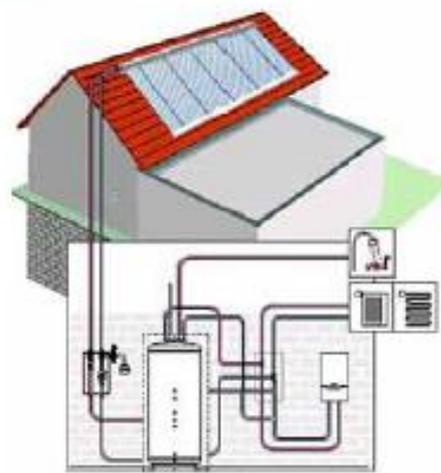
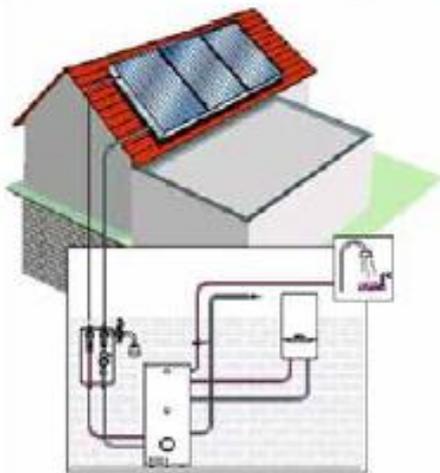
If you don't have the possibility to install a heating system that uses biomass and solar collectors or a gas central heating system, and electricity is the only available energy source, it is recommended that you install a heat pump that uses nearly 2.5-4 times less power than the electric radiators or furnaces. The same appliance can be used for cooling in the summer. Heat pumps can be based on different systems: air-air, earth-water, underground water-water and air-water.



The energy from the sun is permanent, ecologically clean and free, and the costs of installation are relatively small compared to the solar system lifetime. Solar systems are autonomous and usable where there is no network infrastructure.

Depending on the purpose, there are two types of systems that are based on absorption of energy from the sun:

- Solar system – for hot water preparation
- Solar system – for hot water preparation and space heating support



Financing models



Raiffeisen Bank – Financing models

Raiffeisen Bank d.d. Bosnia and Herzegovina: credit lines for energy efficiency

Raiffeisen Bank have secured, in cooperation with KfW and EBRD, several credit lines for financing projects that generate energy savings and that have a number of benefits compared to the regular credit lines offer. The benefits are: attractive crediting conditions, incentives, more favorable interest rates and a simpler approval procedure.

In cooperation with KfW, the Bank is offering more favorable Credit for specific purpose – for energy efficiency. The credit is allocated for the purchase of building materials, installation of new doors and windows, roof, façade, thermal insulation, heating systems and other works that generate a minimum of 20% savings. The additional benefit is the possibility of a cash deposit on the client's account, based on the work's quotation or pro-forma invoice and the fixed interest rate is 7,99%.

- **Credit amount:** up to 40.000 KM
- **Repayment period:** up to 7 years

The second KfW credit line for physical persons is the Commodity loan for energy efficiency, aimed for a purchase of more energy efficient home appliances, heating systems, lighting systems, thermal insulation for structures etc., with lower interest rate compared to the standard offer for Commodity loan.

- **Credit amount:** up to 30.000 KM
- **Repayment period:** up to 5 years

KfW credit line for energy efficiency for legal persons is aimed toward public companies and institutions, small and medium enterprises and private legal persons. The credit line allows financing of simple energy efficiency projects like lighting system change, heating, thermal insulation, electrical appliances, etc., as well as financing of complex projects for which the production of "Technical overview of bill of quantities" is needed, made by consultants. This credit line allows for energy cost savings compared to current status, with attractive credit conditions and a simple and fast procedure for approval and evaluation.

- **Credit amount:** up to 1.000.000 EUR
- **Repayment period:** up to 7 years, including the grace period up to 3 years.

EBRD program for financing energy efficiency projects and renewable energy sources for the Western Balkans is aimed at private legal persons for energy efficiency projects in buildings, renewable energy and energy efficiency in industry. This financing program secures free consultant assistance during identification, preparation and verification of qualified projects, and an incentive bonus from EBRD of up to 15-20% of the loan amount, depending on the type of the implemented measure.

- **Credit amount:** up to 2.000.000 EUR
- **Repayment period:** up to 5 years, with 2 years of grace period maximum.

Credit lines for energy efficiency allows You to save money by installing high quality equipment and thus contribute to the more efficient use of energy in BiH and long term environmental protection!

Raiffeisen direct info: 033 755 010
www.raiffeisenbank.ba



UNICREDIT BANK

ENERGY EFFICIENCY LOANS – EBRD PROGRAM FOR FINANCING OF RENEWABLE ENERGY SOURCES

Recognizing the more and more popular issue of saving energy, on a global and local level, UniCredit Bank d.d. implemented a new credit line for financing investments into energy efficiency and projects that generate energy savings, in cooperation with EBRD.

Credit users:

- Private enterprises, freelancers and other private legal persons registered in BiH;
- Legal entities under private ownership, without majority ownership or under the majority control from the state or any other political, government or managing entity, agency;
- Legal persons that are eligible for credit, in conformity with the Bank's business policies.

Loan purpose:

- Projects for energy efficiency in industry;
- Projects for energy efficiency in structures;
- Projects for renewable energy.

General criteria of eligibility for specific sectors:

- The energy savings coefficient is equal to or larger than 30% in the building sector and the energy savings coefficient is equal to or larger than 20% in all other cases, measured at the annual level;
- The reduction in the emission of gasses, measured per ton of CO₂, equal or larger than 20% based on measurement on the annual level.



Financing models

Models of financing

Consultant's help consists of:

- Identification of adequate projects and assistance with the production of the same so the existing requests are satisfied;
- Estimate of technical and financial sustainability of the project;
- Preparation of the Plan for rational usage of energy or energy Audits, for every eligible project, where needed;
- Upon project completion, delegated consultant for verification checks if the EBRD credit lines' requests are fulfilled, whether the project is completed in compliance with the relevant Plan for revision of energy and rational energy usage, based on which the right to incentive payout is achieved.

Repayment period:

- 10 years, including the grace period of 1 year maximum, which is determined depending on the concrete project needs.

Loan amount:

- 2.000.000 EUR max

Security instruments

- Set per the Bank's Instrument policies for claims

Reimbursement/incentive for the credit user for successful completion of the project:

- Projects of energy efficiency in the industry: usually 15%; 20% for new boilers and realization of the small cogeneration/trigeneration;
- Renewable energy projects: 15% in projects that are qualified for incentive prices, *feed-in tariffs* (currently only in BiH and Macedonia); 20% in projects that are not qualified for *feed-in tariffs*;
- Projects for energy efficiency in structures: usually 20%

Contact:

Unicredit Bank d.d.
 Zelenih Beretki 24
 71000 Sarajevo, Bosnia and Herzegovina
 Phone: +387 33 253 726;491 726; Fax: +387 33 217 675
 Email: nejra.hadzlabdic@unicreditgroup.ba
<http://www.unicreditbank.ba>



VOLKSBANK

Your eco bank Volksbank BH is offering solutions tailored to your needs if you would like to:

- Thermally insulate your home / Install thermo insulation on the house (façade)
- Install thermo insulation windows and doors
- Modernize the heating system in flats or houses
- Install thermal insulation on roof constructions
- Purchase energy class "A" house appliances

For physical persons we are offering:

- Mortgage loans
- Loans with other securities

Contact phone: 033 250 023

If you are a legal entity and you would like to:

- Improve the efficiency of the heating system and improve the control over energy usage
- Implement energy saving measures in the manufacturing processes
- Install new heating/cooling systems
- Install energy savings lighting installations
- Insulate the walls, windows and roofs of manufacturing halls or commercial rooms
- By installing the filters, reduce the CO2 up to 20% annually

We are offering investment credit

Contact phone 033 295 638 or 033 721 200

For more information on energy efficiency in your home and the conditions for our credit lines, please visit Info corner "Energy Efficiency" on our website www.volksbank.ba or www.bank.ba and discover how to save money long term and at the same time contribute to nature conservation.



