



INCENTIVES AND CONCRETE STEPS  
TAKEN TO INCREASE ENERGY  
EFFICIENCY BY THE MUNICIPALITY  
OF BITOLA IN 2017-2021

MSc EMILIJA SARAFSKA

ENERGY, ENERGY EFFICIENCY AND RENEWABLE ENERGY  
SOURCES ADVISOR



## 1. ENERGY EFFICIENCY AND ENVIRONMENTAL PROTECTION

\* **Annual Program** (environmental and nature protection measures in the area of the Municipality of Bitola) -The Department of Urban Planning and Environmental Protection

Municipality of Bitola has two measuring stations set: Bitola 1 and Bitola 2 (monitoring daily the ambient air quality)

Daily, Monthly and Annual reports on monitoring the daily PM 10 concentrations - *State Automatic Ambient Air Quality Monitoring System*

### **Warning threshold exceedance:**

- release from work duties (pregnant women, persons over 60, those with chronic asthma, heart attack or stroke conditions)
- Decision providing citizens with free public transport during the high-air-pollution days (January 2020) - Municipal Council

## PELLET STOVES AND AIR CONDITIONERS



**Annual Environment Program** (stimulates the use of renewable energy sources for heating to minimally pollute air and soil and provides a partial refund on funds spent for pellet stoves, and inverter type of air-conditioners).

- 2017 subsidies for pellet stoves in the amount of EUR 91.060
- 2018 subsidies for pellet stoves in the amount of EUR 32.326
- 2019 subsidies for pellet stoves in the amount of EUR 8.125
- 2019 subsidies for inverter type air-conditioners in the amount EUR 81.300
- In 2020, the Municipality of Bitola received over EUR 2.500.000 through the Government for procurement and installation of highly efficient inverter type air-conditioners, awarding over 2683 air conditioners, as solid and fossil fuel replacement and pollution source reduction.

# BICYCLES



*Public call (2018)* - to stimulate citizens to use bicycles: measure refers to the reduction of air pollution from vehicles.

- 2018 subsidies for bicycles in the amount of EUR 9.500
- 2020 subsidies for bicycles in the amount of EUR 16.260
- 2021 subsidies for bicycles in the amount of EUR 27.650



## 67 Air purifiers:

kindergartens (better air quality in preschool premises)

## TRAFFIC STUDY



The Municipality of Bitola fast projects including pollution reduction measures (that favor pedestrian and bicycle traffic and discourage motor traffic in central city area)

*\* Short-term measures envisaged for fast action with minimal financial resources:*

- partial relocation of city streets & roads converted into bicycle lanes
- introduction of one-way traffic regime in the downtown area
- introduction of pedestrian zones
- guidelines for reducing the number of vehicles
- guidelines for reducing the speed of vehicles (zone 10 and zone 30 near primary and secondary schools)
- guidelines for increasing the number of parking spaces for their easier access are in order to reduce noise and pollution in the downtown area, and increase mobility and traffic flow.
- active implementation and control of traffic regime for heavy goods vehicles
- use of the existing ring roads

## **GASIFICATION, PUBLIC TRANSPORT AND WASTE COLLECTION**



Local Government priority: **Gasification Project** of the Municipality of Bitola

Environmental protection conceptual design and elaborate - 25,000 m length

Infrastructure project - 3,000 m

Architectural-urban project for infrastructure corridor completed.

**Construction of gas pipeline network portion** - The Municipality of Bitola (final phase of documentation competition and financially ready to start)

\* Public Enterprise for passenger transport (***Council Decision***) - Municipalities of Bitola, Novaci and Mogila

\* Eco-friendly minibuses for school transport and citizens' needs

**New way of waste processing** (processed and made into compost: beginning of a new phase of selective waste collection through a project from the EU Interreg program for cross-border cooperation with the Republic of Greece and the national funds of the participating countries)

PE "Komunalec" from Bitola: collection of organic waste, 2000 bins of 120 liters, 200 bins of 240 liters and 35 brown containers procured. The project also provides a garbage truck.

## WASTEWATER TREATMENT PLANT PROJECT



**Collection system for wastewater** from households and tourist facilities in the village of Trnovo developed (further be extended to other parts of the villages of Trnovo and Magarevo)

- Sub-Pelister region wastewaters treated in accordance with world standards.
- Hotel Molika wastewater technical documentation developed for smaller treatment plant with a collecting system.
- Sub-Pelister collecting system is about 5.5 km long. The whole project value is around EUR 975.600.



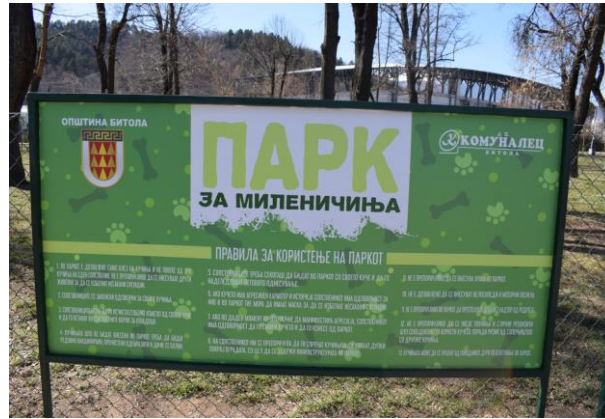
# PARKS



Parks built at over 60 city locations - enriched with children props (4 inclusive parks).

New parks built at over 20 locations

Eco park and pet park placed in the City Park in Bitola



Since 2020, over EUR 211.400 have been invested in children's parks and landscaping

Funded by the Municipality of Bitola in cooperation with PE "Komunalec"



## STREET LIGHTING

Old, damaged and inefficient lighting in the Municipality of Bitola replaced with new LED energy efficient lights

In 2020, savings of about EUR 195.121 made annually and over EUR 57.000 spent on current maintenance.

Savings are expected to be higher in 2021.



## KINDERGARTENS:

### JOUDG "ESTREJA OVADIJA MARA"

- completely new roof of "Vangel Majoro" and "Prolet" kindergartens
- window frames in a new kindergarten playroom "Rosica" in Bukovski livadi
- constant change of ordinary with LED bulbs
- new kindergarten in Kravari
- heating with inverter air conditioners
- Everyday work devices replaced with new highly energy-efficient ones



### JOUDG "MAJSKI CVET"

- complete changed roof structure and new facade in kindergarten "Koca Vasileva"
- changed interior window frames in "Kokiche", "Kachunka", "Peperutka" and "Slavejce"
- new LED bulbs installed in all buildings
- air conditioners installed in all buildings, to reduce central heating pollution



## PRIMARY SCHOOLS



12 primary schools in the Municipality of Bitola

"St. Cyril and Methodius" primary school switched to energy efficient heating from previously highly pollutant wood fired steam boiler

- Lighting replaced with new LED lighting
- New LED lighting reflectors installed in sports halls
- Doors and windows replaced to achieve greater energy efficiency and heat protection



# MUNICIPAL HIGH SCHOOLS



## High school "Taki Daskalo"

- roof reconstruction of the two buildings at "Taki Daskalo" school, worth over EUR 260.000
- both school buildings have PVC windows
- Building facade of block B has thermal insulation

## High school "Josip Broz-Tito" funded by the Municipality of Bitola is in the process of reconstruction and investment in energy efficiency of the school:

- completely changed windows with high energy-efficient energy windows
- replaced electrical installation
- ceilings in the rooms lowered and the entire lighting in the school replaced with LED lighting

**High school "Jane Sandanski"** - completely reconstructed electric lighting, after which a new energy efficient LED lighting was installed.

**High school "Kuzman Shapkarev"** received completely new window frames and completely new energy-efficient facade

**High school "Gjorgi Naumov"** - reconstruction of roof and window frames in the amount of EUR 160.000.



# PUBLIC ENTERPRISES

-Joinery changed in part of PE "Komunalec" premises.

-In PE "Niskogradba", part of the joinery in the administrative building was changed, LED lighting was completed in the administrative building and in the commercial yard. The wood boiler was changed with a pellet boiler to reduce the pollution from harmful emission into the air.

- PE "Vodovod" is building a new administrative building that will meet all energy parameters of most modern technology in energy efficiency. According to the project, panels will be installed on the roof, internal cooling and heating will be set, facade will be constructed with special energy efficient materials and LED lighting will be installed.

-PE "Pazari" is the first public enterprise in the country, providing electricity for own needs from photovoltaic panels, placed on the roof structure of the existing eaves in the City Market. In this way, saving funds for energy consumption, contributing to protection of the environment and fulfilling part of the obligations in relation to the recommendations given by the EU will be achieved.

- new LED bulbs installed in PE "Pazari" in the city market
- new pellet heating system installed in the administrative building
- complete facade replacement and a new quality wooden joinery
- completely rehabilitated city market with water supply and electrical installation
- complete paving of part in front of the administrative building
- installation of steel canopies, metal stalls and a fence.



## SPORTS HALL “BORO CURLEVSKI”

Construction works were performed in the Sports Hall "Boro Curlevski“:

- complete change of the roof,
- complete change of non-functional joinery,

To ensure energy efficiency of the entire building, through the project "Benefit" implemented by the Municipality of Bitola within the cross-border cooperation program with the Republic of Greece.



# THANK YOU FOR YOUR ATTENTION



MSc EMILIJA SARAFSKA  
ENERGY, ENERGY EFFICIENCY AND RENEWABLE ENERGY SOURCES ADVISOR