



# *The proactive policy of the Gabrovo Municipality for sustainable energy efficiency*





## ***Gabrovo Municipality - General information***

Total area: 555.57 km<sup>2</sup>

Population: 70 914 (15.07.2016)

Registered unemployed: ~ 7 %

Elevation - 392 m, semi-mountainous relief

Climate: temperate continental

Average annual temperature: 10 degrees C

European transport corridor # 9

Railway CE 95 of the European Railway net

Well developed educational system

National industrial center

Quality recreation and tourism

Capital of Humour and Satire





## ***Gabrovo Municipality - main advantages***

Geo-strategic location in Bulgaria and good transport accessibility - the geographic center of Bulgaria

Traditional industrial center with more than 3300 companies situated in 3 industrial zones with developed infrastructure

Good quality of life - provision of high quality services to citizens and business

Well developed educational system - 3 professional high schools and 1 Technical University

Attractive place for tourism and recreation - One of the famous historical places in Bulgaria, Bulgarian Capital of Humor and Satire





# *Gabrovo - towards sustainable development*

- Gabrovo is one of the leaders in the regional development and strategic planning in Bulgaria
- Gabrovo is one of the most proactive Bulgarian municipality in management and acquisition of EU funds. Projects are mainly focused on creation of sustainable and attractive environment
- Main goal - to find an innovative approach for improvement of the city environment and increasing the administrative capacity of Gabrovo Municipality in order to solve environmental and urban development problems







# Energy efficiency is one of the main objectives of the municipal management

- Implementation of a proactive policy for energy efficiency, which will transform Gabrovo to a modern European municipality, investing in intelligent, sustainable and balanced territorial economic growth





# Sustainable energy policy of Gabrovo Municipality

- Gabrovo Municipality - a pioneer in energy efficiency projects and intelligent energy with experience dating back to 1992
- A Municipal network for energy efficiency EcoEnergy was established in Gabrovo in February 1997 based on the initiative of 23 Mayors
- Existing energy data base including energy consumption of all municipal buildings since 2008 till now.
- Demo zone for energy efficiency (Global Ecological Fund/UNDP - 1999-2004)
- Pilot municipality (Global Ecological Fund/UNDP - 2006-2010)
- Pilot Municipality in Project MODEL funded by Intelligent Energy for Europe (2007-2010)
- Pilot Municipality (Covenant capaCITY - Intelligent energy for Europe - 2011-2014)
- Partner of Project SPP Regions funded by Program Horizon 2020 in partnership with Eco Energy
- One of the leading Municipalities in infrastructural projects for energy efficiency (2007-2016)
- Information Center for energy efficiency and Chairman of SC of Eco Energy
- Accession to the Covenant of Mayors (July 25, 2013)

# The street lighting in the past

*Project „Strategy for reduction of greenhouse gases emissions through energy efficiency. Demonstrational energy efficiency zone in Gabrovo, Bulgaria“*

*Global Ecological Fund (GEF) and UNDP*

*Duration: 1998 - 2004*



- An energy audit for the status of the street lighting in the whole city was carried out;
  - 2 energy efficiency measures were implemented: installation of energy efficient lamps in the whole city and improvement of the exploitation regime through the introduction of a centralized management of street lighting by means of a URW radio channel;
  - A replacement of the most old street quicksilver lamps with new high pressure sodium lamps was done (the dismantled lamps in the town were used over the next years for the maintenance of the street lighting in the villages).
- 
- Total annual economies: 5155 MWh (290 000 USD)
  - Total investment: 424 250 USD





## *Municipal days of intelligent energy*

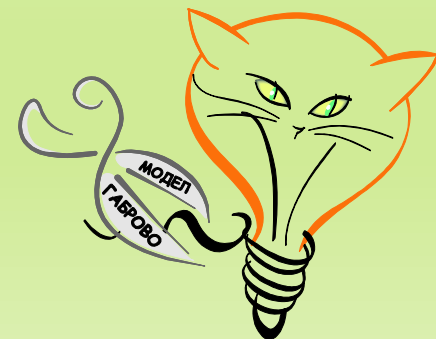
### Project "MODEL"



The highest acknowledgement of Gabrovo Municipality for successful energy efficiency practices is "Best pilot municipality MODEL" (Award which was awarded by an independent international jury at the competition "Best pilot municipality MODEL" for 2008.)

In April 2009 Gabrovo Municipality was invited to present its experience at the annual meeting of Energie-Cite and the Alliance on climate in Brussels.

In 2009 the information activities and campaigns continued, in order to promote the "MODEL" project, organizing "Days of the Intelligent Energy in 2009".





# Priorities of Gabrovo Municipality

- Construction and development of sustainable infrastructure
- Development of sustainable urban mobility systems
- Use of alternative energy sources
- Changing attitudes towards energy
- Increasing the knowledge and skills on local level through capacity building

## Strategic documents

Municipal plan of development of Gabrovo municipality /2014 – 2020/

Integrated plan for urban regeneration and development /2014 – 2020/

Sustainable Energy Action Plan (SEAP) /2015 – 2020/

# OBJECTIVES

- Decrease CO<sub>2</sub> emissions by more than 20% till 2020
- Use of alternative energy sources
- Decrease of the final energy consumption

## GABROVO MUNICIPALITY - GREEN, INNOVATIVE AND EFFECTIVE

Rational use of energy resources, energy planning and ensuring energy independence, are the key components of sustainable development policy of Gabrovo Municipality

# Main areas

- 1/ Buildings
- 2/ Gasification
- 3/ Street lighting
- 4/ Transport
- 5/ Waste management

## New and refurbished buildings in the last 8 years

Energy efficient measures have been implemented in 7 schools, 13 kindergartens and 2 nurseries. 1 multifunctional hall, 1 Social house for elderly disabled people, 1 passive house, 2 new residential family care centers etc.

# Educational infrastructure - schools





# Educational infrastructure - kindergartens



# Sport facilities – Acrobatic Hall funded by National Eco Fund







# Project "Provision of effective, accessible and modern educational infrastructure for the sustainable development of Gabrovo municipality", 2007-2013 (OPRD)

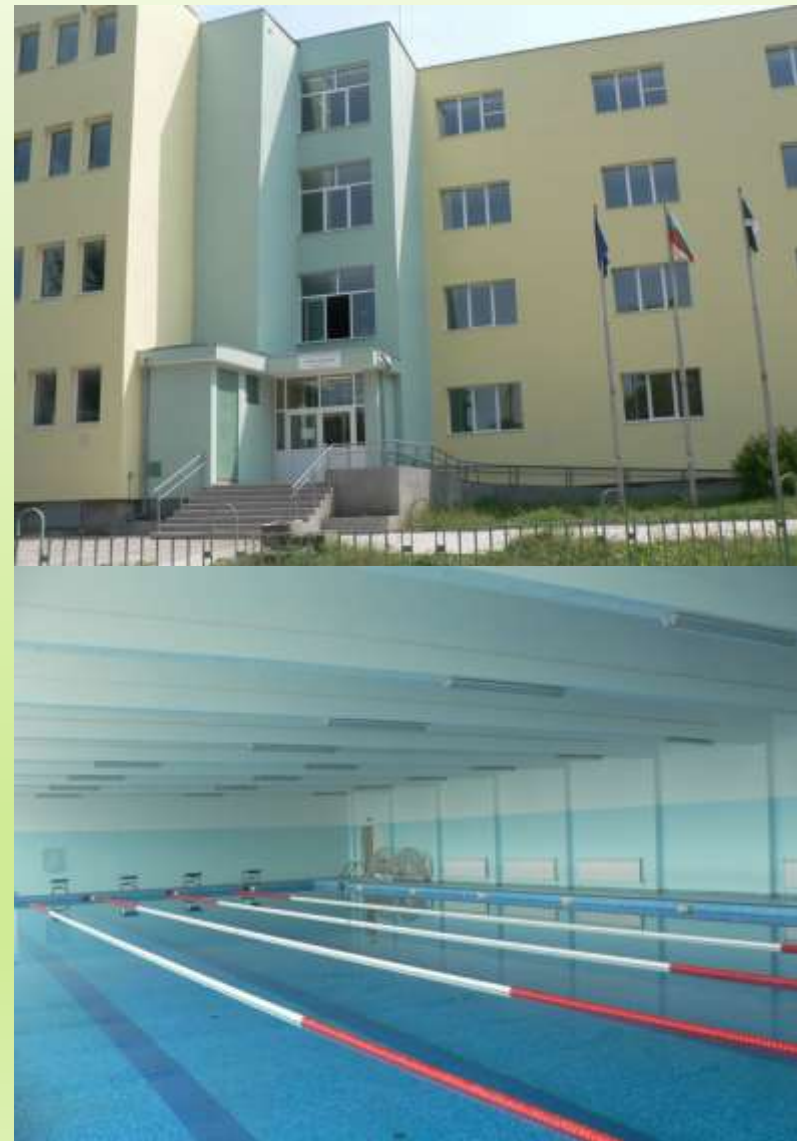


Total Budget: 2 741 199 EUR

- Improvement and modernization of the educational infrastructure of Gabrovo municipality through reconstruction of the buildings of 2 schools and 1 kindergarten
- Energy efficiency measures: facade thermal insulation, renovation of hydro insulation, replacement of old window frameworks, renovation of the electric, water and drainage systems, illuminative devices, installation of solar system for pool water heating in one of the schools.

Results:

1515 students and kids live and study in better environment





**BG 0020 „Community oriented improvement of childcare services in municipality of Gabrovo”, funded by the FM of EEA**

**Total budget: 305 040 EUR**

**Duration: 2009 - 2012**



- Replacement of window frameworks, façade thermal insulation, renovation of roof and electric system, drainage and outdoor sewerage systems for disposal of surface water, renovation of broken and loose pavers on the site of 5 children playgrounds, provision of new playground equipment.
- Project location: "Zora" Creche Premises, Gabrovo.



# Project "Provision of effective, accessible and modern educational infrastructure for the sustainable development of Gabrovo municipality", 2007-2013 (OPRD )



Total Budget: 4 030 435 EUR

Duration: 2010 - 2013

► Implementation of energy efficiency measures in 14 buildings of the municipal educational infrastructure, based on elaborated investment projects - replacement of window frameworks; thermal insulation of facades, roofs and floors; overall reconstruction of old heating systems; construction of a central hot water system by means of solar collectors, provision of energy-saving illuminative devices.

Target group: 3146 students and kids







# "Improvement of the cultural infrastructure - contribution to the sustainable development of Gabrovo municipality" 2007-2013 (OPRD)



Total Budget: 791 018 EUR

Duration: 2009 - 2011

- Implementation of energy efficiency measures and provision of specialized technical equipment in "Vazrazhdane" Hall, Gabrovo.
- An overhaul of the "Vazrazhdane" hall, including improvement of the energy efficiency through the replacement of the woodwork, as well as of ventilation, heating and electrical installations and provision accessibility to the hall.



# Project "Improvement of the social infrastructure and the quality of social services for disabled people" 2007-2013 (OPRD)



Total Budget: 786 090 EUR

Duration: 2009 - 2011

► Efficiency measures: hydro insulation and roof reconstruction, façade thermal insulation, replacement of floor coverings and window frameworks, renovation of the electricity, water and drainage systems for the purpose of relocating the existing Home for elderly people with disabilities.



# Gabrovo "Demonstration Project for the Renovation of residential buildings"

*3 renovated multifamily buildings*



*Reduction of el. consumption: 55% - 75%*

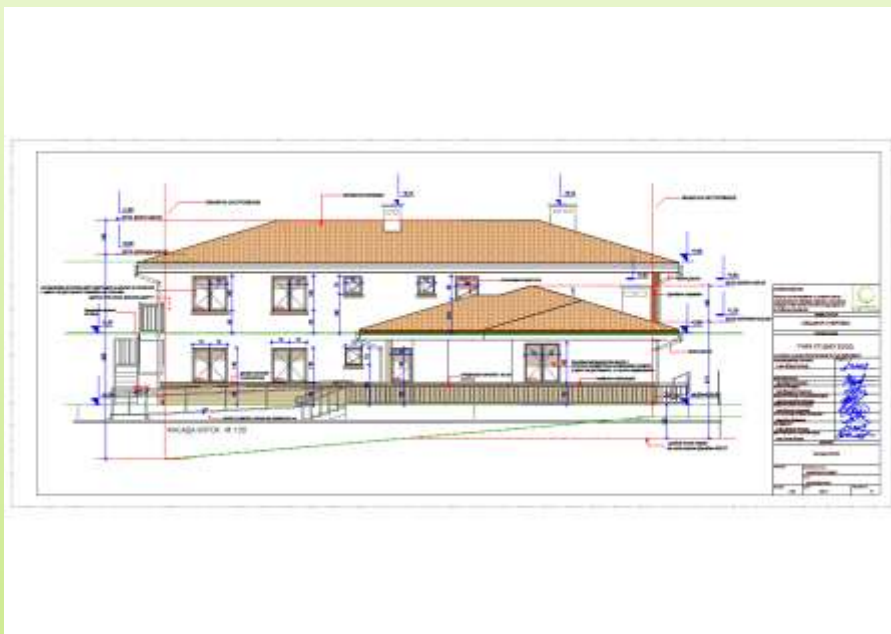
*Reduction of CO2 emissions: 21,2  
tones/year*



## Construction of 2 family-style Centers

2007-2013 (OPRD)

The buildings will be class “B” which corresponds to the standard energy efficiency requirements under the Energy Efficiency Act and its regulations



Built-up area: 546 sq.m.  
Investment: 258 540 EUR



Built-up area: 511 sq.m.  
Investment: 267 230 EUR







# The street lighting defines the standard of the residential environment

*Project „MODERNIZATION OF THE STREET LIGHTING IN GABROVO MUNICIPALITY” - the natural follow up, funded by Kozloduy International Decommissioning Support Fund (KIDSF), 2012 -2013*

The project includes the system of street lighting in 128 villages on the territory of Gabrovo municipality.

Energy efficiency measures: replacement of 2 691 old illumination devices (100W high pressure sodium lamps (HPSL) and quicksilver lamps), with highly effective new ones which have light-emitting diodes (LED) and introduction of a system for distant GPRS street lighting management.

The introduction of a system for distant management through a GPRS connection is an opportunity for a precise illumination durability regulation and prevention of electricity over-expenditures.

Total investment: 560 880,53 EUR

Expected economies: 1 543 561 kWh/year or 123846 EUR/year

Reduction of CO2 emissions: by 22 155 tones/year

65000 people directly benefit from the project results

Expected decrease of energy consumption: 64%





## *"Beautiful Bulgaria" Programme*

► *Reconstruction and energy efficiency measures in many buildings in Gabrovo - "Mickey Mouse" 1 Kindergarten /2007/ - façade and window frameworks, 77000 EUR; building on 23 Radetska Str. /2007/ - roof reconstruction, 90 000 BGN; "Slaveiche" Creche /2009/ - facades and window frameworks, 93500 EUR; "Mecho Puh" Kindergarten /2009/ - façade and window frameworks, 120000 EUR; "Aprilov-Palauzov" Library /2010/ - roof and window frameworks, 68000 EUR.*



# “Investments in “green industry”

## Operational programme "Development of the Competitiveness of the Bulgarian Economy" 2007-2013

- ▶ Integrated investment and advisory support to SMEs in Bulgaria for the transition to a "green economy“
- ▶ Implementation of energy-saving technologies and introduction of renewable energy sources
- ▶ Application of technology to reduce the energy intensity of production
- ▶ Measures to improve business processes and energy management
- ▶ Impact: Contribution to environmental sustainability
- ▶ Budget: about 150 million EUR
- ▶ Grants: 50%
- ▶ Maximum grant per project: 1 million EUR





# *Days of urban planning*

Project BG161PO001/4.2-01/2008/109 developing sustainable urban environments through interregional cooperation, financed by the Operational Programme Regional Development 2007-2013, based on partnership between Gabrovo Municipality Bulgaria and Nichelino Municipality, Italy

- Presented concepts of architectural groups, working on the representation of key sites from the city of Gabrovo
- Open exhibitions - photography and graphics
- Non-traditional role-playing games that encourage creative thinking, innovation and creativity.



# *Capacity building by training and examination of professionals*

## *Intelligent Energy Europe program*



### Projects PassREg (PassiveHouse Regions with Renewable Energy)

The program promotes “energy efficiency first” through Passive House, enabling remaining energy needs to be feasibly covered with on-site or nearby Renewable Energy sources.

Covenant capaCITY project (“Capacity building of local governments to advance Local Climate and Energy Action - from planning to action to monitoring”) 2011 - 2014 - to assist Sustainable Energy Action Plan (SEAP) development in Europe - from motivation, planning, implementation, to monitoring and evaluating





# Passive House

## Expansion of kindergarten "Sun", Base 1, New Building



Social inclusion project of

International Bank of  
Reconstruction and Development/  
World Bank

Built-up area: 956 sq.m.

Investment: 384 490 EUR

Key features:

1. External thermal wall insulation
2. High quality windows
3. Use of renewable energy sources (solar, heat pumps)

The concept of the newly designed building is to achieve "A" class energy performance close to the standard "passive house" for achieving year-round comfort at minimal operating costs.

# Passive house

The first kindergarten in Bulgaria, designed and built under the standard "passive house", confirmed by international certificate - design and implementation of kindergarten supported by the European project "Passive regions using renewable energy" program "Intelligent Energy for Europe"



Passive House Institute  
Dr. Wolfgang Feist  
Rheinstr. 44/46  
D-64283 Darmstadt

## Certificate

The Passive House Institute awards the seal "Certified Passive House" to the following building

Kindergarden Sun 1, Ljuben Karavelov Street, No. 32, 5300 Gabrovo, Bulgaria



Client: Municipality of Gabrovo  
Vazrazhdane Square 3, 5300 Gabrovo, Bulgaria

Architect: SoAir Int. Ltd.  
Macedonia Blvd. 15, 1806 Sofia, Bulgaria

Building: K DESIGN Ltd.  
Services: Lulin Street 1, bl.32, ap.37, Sofia, Bulgaria

EnEffect Design  
Hristo Smirnovski Blvd. 1, 1164 Sofia, Bulgaria

This building was designed to meet Passive House criteria as defined by the Passive House Institute. With appropriate on-site implementation, this building will have the following characteristics:

- Excellent thermal insulation and optimised connection details with respect to building physics. The building has been carefully designed with respect to summer comfort as well. The heating demand or the heating load will be limited to  
**15 kWh per m<sup>2</sup> of living area and year or a heating load of 10 W/m<sup>2</sup>, respectively**
- A highly airtight building envelope, which eliminates draughts and reduces the heating energy demand. The air change rate through the envelope at a 50 Pascal pressure difference, as verified in accordance with ISO 9972, is less than  
**0.6 air changes per hour with respect to the building's volume**
- A controlled ventilation system with high quality filters, highly efficient heat recovery and low electricity consumption, ensuring excellent indoor air quality with low energy consumption
- A total primary energy demand for heating, hot water, ventilation and all other electric appliances during normal use of less than  
**120 kWh per m<sup>2</sup> of living area and year**

This certificate is to be used only in combination with the associated certification documents, which describe the exact characteristics of the building.

Passive Houses offer high comfort throughout the year and can be heated or cooled with little effort, for example, by heating/cooling the supply air. Even in times of cold outdoor temperatures the building envelope of a Passive House is evenly warm on the inside and the internal surface temperatures hardly differ from indoor air temperatures. Due to the highly airtight envelope, draughts are eliminated during normal use. The ventilation system constantly provides fresh air of high quality. Energy costs for ensuring excellent thermal comfort in a Passive House are very low. Thanks to this, Passive Houses offer security against energy scarcity and future rises in energy prices. Moreover, the climate impact of Passive Houses is low as they reduce energy use, thereby resulting in the emission of comparatively low levels of carbon dioxide (CO<sub>2</sub>) and air pollutants.

Issued:  
Darmstadt, 08.05.2014

Dr. Wolfgang Feist

Certificate-ID: 8942\_PHI\_PH\_20140508\_DA

# Passive House – Kindergarten Slunce







# Technical infrastructure

Integrated Water Cycle Project of Gabrovo - reconstruction of 4 pumping stations; constructed 1 new pumping station; reconstruction of water treatment plant for drinking and waste water; delivery and installation of energy efficient equipment.





# Waste management

Under the National Programme for Control of Waste, Gabrovo municipality is designated as a center of regional system for managing the waste. Within the project under OP Environment a regional system for waste management has been built through reconstruction of the municipal landfill for municipal solid waste in order to turn it into the regional needs of the municipalities of Gabrovo and Tryavna with supply and installation of equipment for separation and composting of household waste.





# Multi-family building



Gabrovo Municipality is a proactive partner of the National Programme for energy efficiency of multi-family buildings.

The main goal is to improve the conditions in residential houses through implementation of energy efficiency measures which will reduce energy consumption by 40%.



- 1 multi-family building is opened on 6th October 2016;
- 2 multi-family buildings have been refurbished up to now;
- 17 signed contracts for construction works;
- 4 contracts for construction works are planned to be signed;
- 9 multi-family buildings expect entering into force of the decisions for selection of contractors;
- 5 multi-family buildings are in process of assessment of offers for selection of contractors;
- 10 multi-family building wait for procurement procedure for energy audit

# Sustainable Urban Transport



The largest project of Gabrovo Municipality till 2020.

Total amount: 6,7 mln. EUR

Reconstruction of existing bus stop

Reconstruction of the road junction and the station square, repair of 2 subways

Improving the organization of traffic through the reconstruction of 5 key intersections

Implementation of ICT in 104 bus stops and 57 bus

Delivery of 14 new buses



## Next in our policy...

### Street lighting in the City

Gabrovo Municipal Council decided to launch a procedure for a complete renovation of the street lighting system in the city through an energy contract with guaranteed results.

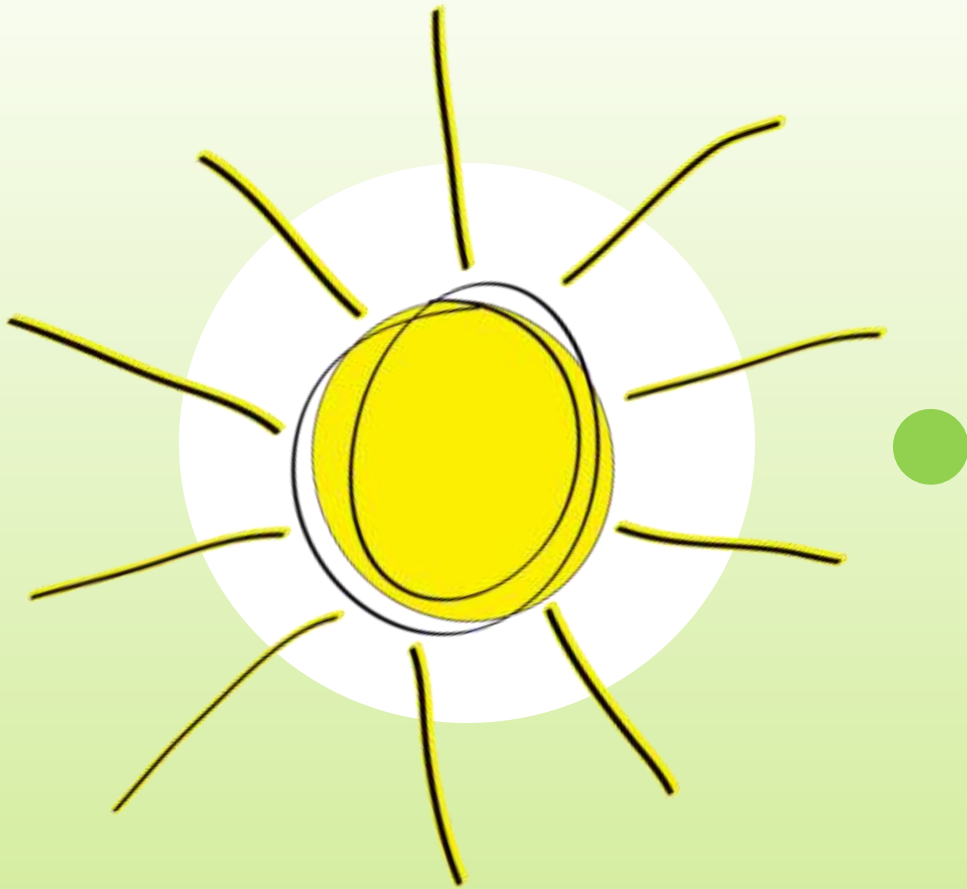


### Last 2 schools with implemented energy measures

A project in the investment program of Gabrovo Municipality, which will be funded by OP “Regions in growth” 2014-2020. Last 2 schools in Gabrovo will be refurbished with implemented energy saving measures – the Project will cost 2 mln. EUR and is under assessment.

Building of Gabrovo Municipality, Sport Hall, House of Humor, House of Culture....

And many others.....



**THANK YOU FOR YOUR ATTENTION!**