

SEERMAP project  
Belgrade, September 22<sup>nd</sup> 2016

---



*Zarko Ilievski, BScME  
Project Developer*

*[z.ilievski@macef.org.mk](mailto:z.ilievski@macef.org.mk)*

---

# SEERMAP project

## Belgrade, September 22<sup>nd</sup> 2016



- ❖ 25 713 km<sup>2</sup>
- ❖ 2.1 million inhabitants
- ❖ Energy supply is based 55% on domestic fossil fuel and hydropower
- ❖ Gross energy demand is over 130 000 TJ
- ❖ 65 GJ per capita
- ❖ cca. 650 M€ for imported fuel and electricity

## Main data

- ❖ **MACEF** is a scientific multi-disciplinary non-for profit association
- ❖ Founded: **2002**
- ❖ **7** full time employed persons
- ❖ Over **40 active** members
- ❖ **2** premises
- ❖ **No governmental financial support**
- ❖ **ENERGY GLOBE National Award for 2012**

## OUR MISSION

- ❖ **To increase the Energy Efficiency (EE) and Environmental Protection at national level by:**
  - **capacity building,**
  - **identifying and implementing EE measures in the cooperation with**
    - governmental institutions,
    - local selfgovernment units,
    - engineers, donor organization and ecologists.
- ❖ **Have no intellectual or financial ties to vendors, manufacturers and contractors, or to any other third parties**

**SEERMAP project**  
**Belgrade, September 22<sup>nd</sup> 2016**

---

**Main activities**

- ❖ **Preparation of strategic documents** (EES, 1 and 2NEEAP, ES buildings sector, SEAP, BU method, Municipal EE AP, Rule books, EEAP for households, manuals...);
- ❖ **Study works and projects** (national and international);
- ❖ **Diagnostic measurements, designing, supervision, revision of documents;**
- ❖ **Trainings of energy auditors, municipal officers;**
- ❖ **Training of responsible persons in the hospitals, education sector;**
- ❖ **Promotion of EE and RES measures in the schools and kindergartens;**
- ❖ **Lead organizer of the Energy Week Macedonia (10 years);**
- ❖ **Publishing the *InfoMACEF* monthly e-zin (161);**
- ❖ **Issuing books, brochures, flyers.**

# SEERMAP project

## Belgrade, September 22<sup>nd</sup> 2016

**ВЛЕК**

Редактори:  
Проф. Д-р Константин  
Илијана Хаџиевски

ALLIANCE TO  
SAVE ENERGY

МАЦЕФ

RENEUER

ЕНИ

Пове  
РАЗ  
КОР  
РЕД  
УМНО У  
Помо

Скопје, јун

Број 144

МАЦЕФ

Koni  
Adei  
Stift

МАЦЕФ

Јуни 2014

[www.kas.de/macedo](http://www.kas.de/macedo)  
[www.macef.org.mk](http://www.macef.org.mk)

Од уредништ  
\* Активности во М  
\* Новост од Маке  
\* МАЦЕФ встра  
\* Корисни веб-адр  
\* Манифестаци

Почитувани колежки  
МАЦЕФ!  
Како и секогаш, обр  
Преземаме многу ф  
финансиски средства  
дека доста сите нас  
успешни да се вл  
што не е јасно ниту  
поточно вклучување  
Критериумите се вис  
но, сепак тоа не е г  
Во меѓународне, ил  
состанок кој треба да  
од проектот mACE (X  
За активностите од т  
енерија можете да и  
Заврши и обуката на  
контролори.  
Веднаш почнува и П  
ЕНЕРГЕТСКИ КОНТРОЛ  
веднаш ќе почнете со  
Заврши настават  
контролори.  
Редовни активности  
REACT, Streetlight EPC

Во Стопанска комора,  
произведе битна пр  
се доведат тивни про  
да има право да в  
сопствено производство  
(или операторот на м  
вишокот на произве  
превземена енергија и  
производителот да пр  
потребна (размена на  
Хабитат Македонија  
проектот, финансиран  
обезбедија нови про  
преку овој проект. Бро  
Како и секогаш, Ве по  
убави примери за ва  
информации за успеш

Поздрав до следниот Б  
Д-р Константин  
Проф. д-р Константин

ЗА МАЦЕФ  
МАЦЕФ е доброволно  
стручни знаења од обла  
средина во Република Ма

Број 144

МАЦЕФ

Министерство за животна средина и просторно планирање  
Република Македонија

ЕЛИМИНИРАЊЕ НА ЗАГАДУВАЊЕТО  
НА КРУГОТ НА КЛИНИЧКИОТ ЦЕНТАР  
ОД ШТЕТНА ЕМИСИЈА НА ПРОДУКТИ НА  
СОГОРУВАЊЕ

Студија  
КНИГА 1

МАЦЕФ

ЦЕНТАР ЗА ЕНЕРГЕТСКА ЕФИКАСНОСТ НА МАКЕДОНИЈА  
2004

## Hydro plants HP “Chebren” and HP “Galishte”



### CRNA

River in Macedonia

The Crna, also Crna Reka is a river in the Republic of Macedonia, right tributary of the Vardar. It runs through much of the south and west of the country. Its source is in the mountains of western Macedonia, west of Kruševo.

**Length:** 207 km

**Source elevation:** 2,493'

**Source:** Drugovo Municipality

**Mouth:** Vardar

**Country:** Macedonia (FYROM)

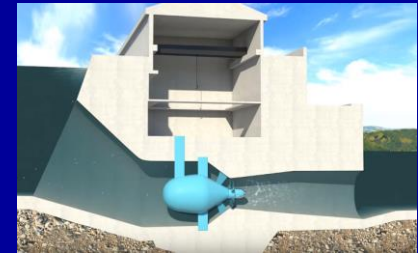
Type	Name	River	P <sub>inst</sub> [MW]	W <sub>god</sub> [GWh]	Investment Millions €	Years to build
Reversible HEP	CHEBREN	Crna reka	333	340/840	319	7
HEP	GALISHTE	Crna reka	193,5	264	200	7



# SEERMAP project

## Belgrade, September 22<sup>nd</sup> 2016

### Hydro electrical system “Vardarska dolina”



Type	Name	River	$P_{inst}$ [MW]	$W_{god}$ [GWh]	Investment Milions €	Years to build
12 HEPs	Vardarska dolina	Vardar	176,8	784	486	7



# SEERMAP project

## Belgrade, September 22<sup>nd</sup> 2016

### Natural gas transport and distribution system

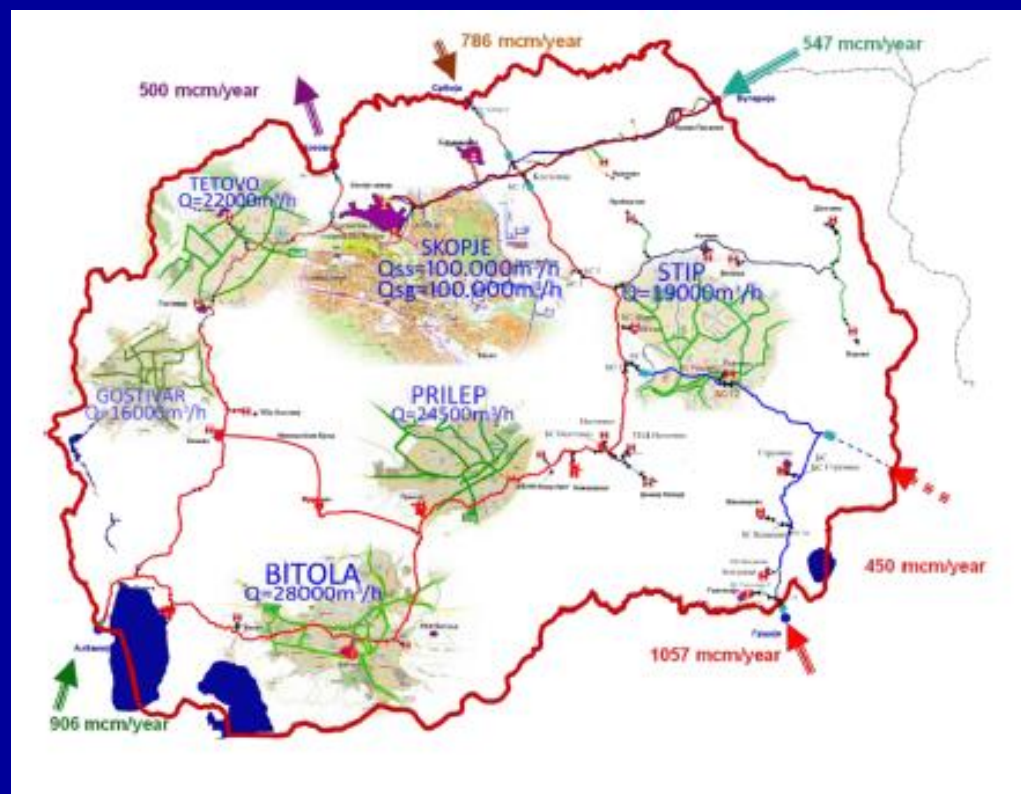
- Skopje subsystem
- Municipal subsystems

Facility	Length (km)	Pipe diameter (mm)
Main transmission gas pipeline	98.197	530
Transmission gas pipeline leading to Kriva Palanka	1.521	108
Transmission gas pipeline leading to Ginovci	1.692	108
Transmission gas pipeline leading to Kratovo	4.592	108
Transmission gas pipeline leading to Kumanovo	6.972	219
Transmission gas pipeline leading to Skopje – South	8.314	426
Transmission gas pipeline leading to Skopje – South	1.859	325

City gas pipeline network	Length (km)
Kratovo	5.902
Kumanovo	5.026
Skopje	25.869

#### Transported quantities

Year	Transmitted quantities (Nm <sup>3</sup> )
2006	82.787.893
2007	105.398.201
2008	119.607.640



# SEERMAP project

## Belgrade, September 22<sup>nd</sup> 2016

### REK “Bitola” cogeneration project for district heating for the City of Bitola



**Table 1:** Power generation capacity and production in Macedonia, 2011 (AF MERCADOS EMI 2013)

Source	Capacity (MW)	Production (GWh)
<b>Hydropower</b>	<b>610.4</b>	<b>1,469</b>
Globochica	(42)	(unknown)
Shpilje	(84)	
Kozjak	(80)	
Tikvesh	(116)	
Vrben	(12.8)	
Vrutok	(168)	
Raven	(21.6)	
Sv. Petka	(36.4)	
Small hydro	(49.6)	
<b>Thermal power</b>	<b>1,284.4</b>	<b>4,858</b>
Bitola (1+2+3)	(699)	(4,784)
Oslomej	(125)	
Negotino	(210)	
CHP Kogel	(220)	
CHP Skopje	(30.4)	(74)
<b>Solar PV</b>	<b>1.6*</b>	<b>(unknown)*</b>
<b>TOTAL</b>	<b>1,894.8**</b>	<b>6,327**</b>

\* According to the Macedonian Energy Agency, there are 35 registered photovoltaic plants in the country at the moment, with a total installed capacity of 7.8 MW and a planned annual output of 9854 MWh ([http://www.ea.gov.mk/index.php?option=com\\_content&view=article&id=679&Itemid=124&lang=mk](http://www.ea.gov.mk/index.php?option=com_content&view=article&id=679&Itemid=124&lang=mk)).

\*\* Not including PV

Type	Name	Consumers	Agriculture	Investment Millions €	Years to build
CHP Bitola	REK Bitola	55000	Mogila, Novaci	40	2

## CNG supply system

Due to **slow involvement of the natural gas pipelines in Skopje and other cities**, the several companies started the mobile supply of CNG to the bigger consumers in the country.



## THANK YOU FOR YOUR ATTENTION



Address: Nikola Parapunov, br 31/locale 52, Skopje, Macedonia  
Phone: +3892 3 090 178  
Fax: +3892 3 090 179  
Web: [www.macef.org.mk](http://www.macef.org.mk)  
E-mail: [macef@macef.org.mk](mailto:macef@macef.org.mk)