




## WP4: Foresight Studies on Energy Resources Consumption in the Participating SEE Cities

- Statistical analysis of the results of Part 2 of the online survey



Bucharest – Ilfov Region  
ADIBI  
30<sup>th</sup> June, 2014 , Thessaloniki

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# Key Energy Technologies Bucharest – Ilfov region

THEMATIC AREAS / KEY ENERGY TECHNOLOGYS ADEQUATE FOR BUCHREST-ILFOV REGION		
CONVENTIONAL ENERGY	RENEWABLE ENERGY	BIO-ENERGY
Reciprocating Engines or Ignition Engines	Geothermal	Cogeneration on Municipal Solid Waste
Combined cycle	Roof top installed and building integrated PV systems	Biogas from Municipal Waste water Treatment Plants
Trigeneration	Solar thermal	Biogas from Agro-zootechnical wastes

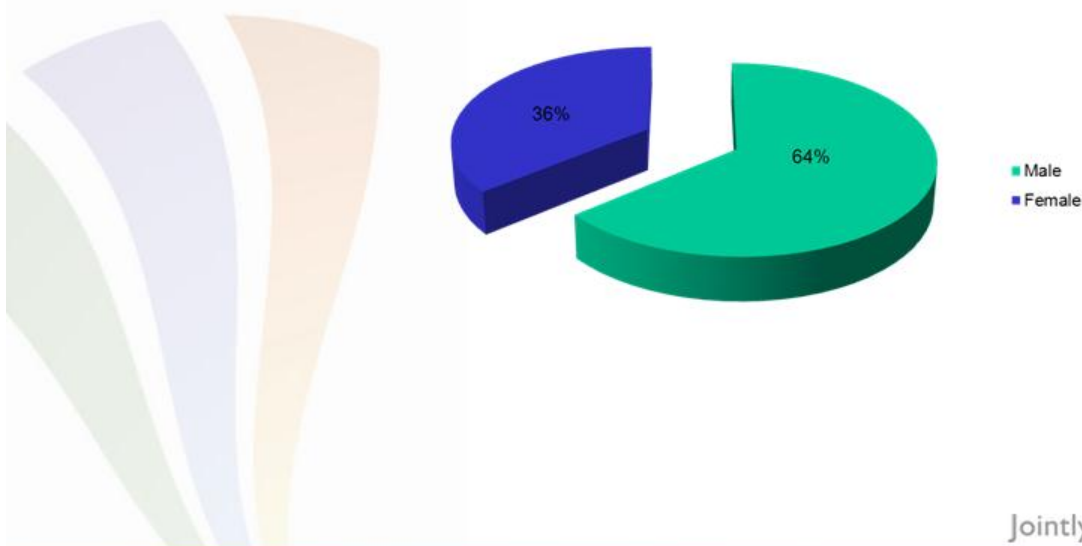
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## Number and gender

Bucharest-Ilfov total respondents were 50

Gender

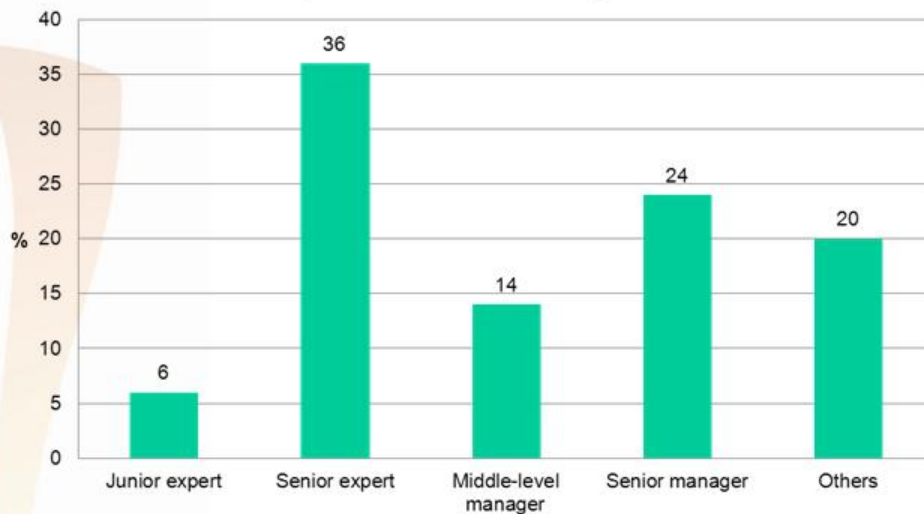


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## Job position

The majority of respondents hold high positions in their organizations': 36% are senior experts, 24% are senior managers/directors, followed by 14% middle-level managers and 6% junior experts .

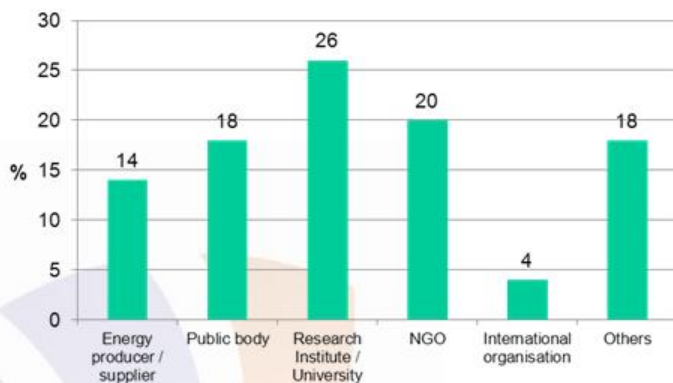
**Current position in the organisation**



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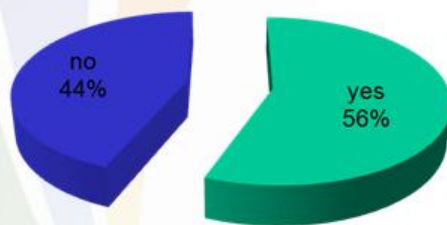
## Sector of affiliation

Area of affiliation



According to the area of affiliation, 68% of the participants are members of public energy bodies, research institutes including universities, NGOs and International Organizations (IO), and **only 14% are producers of renewable energy and the engineers behind the implementation of the technological innovations.**

Research activities performed by your organisation

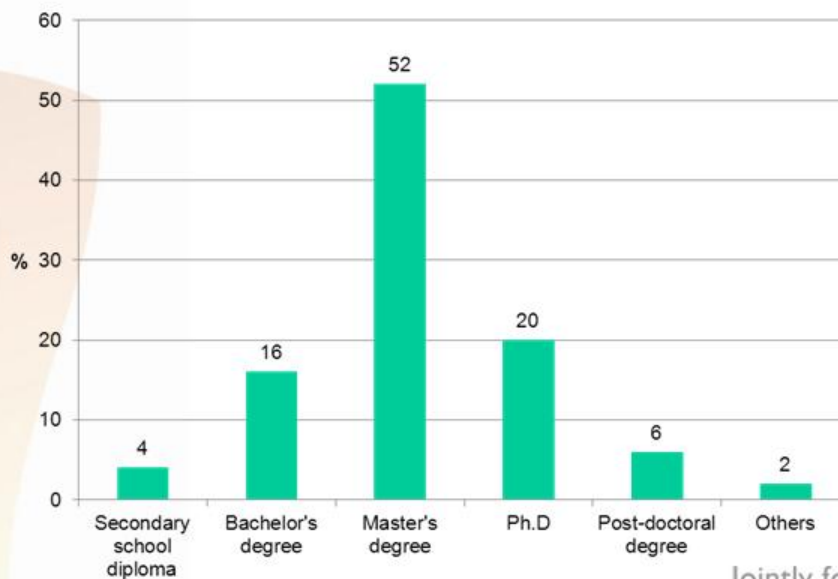


Results show that **56%** of all the respondents' entities **perform research activities** in the energy sector, **fewer experts being engaged in the business side** of energy technology implementation implying a weaker connection between energy RDI and actual marketing of the new technologies.

# Education

From a socio-demographic standpoint the participants in the survey have very high educational background, with a little more than half possessing Master's degrees and another 26% respondents with Ph.D. and post-doctoral degrees.

**Level of education**



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## Area of expertise

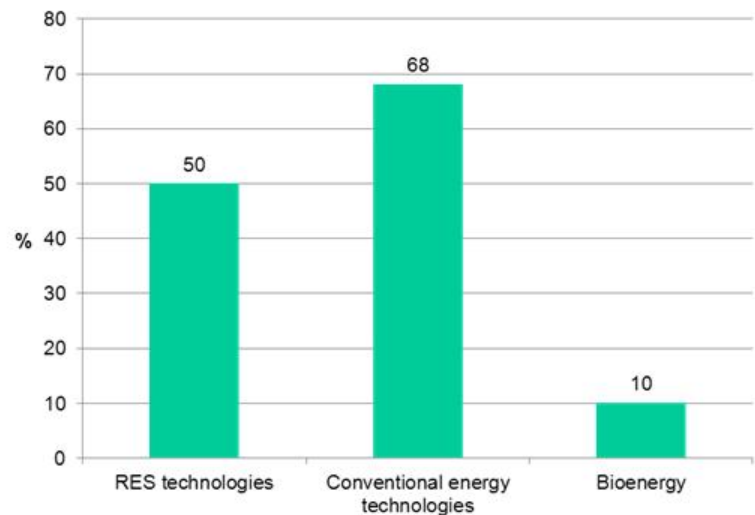
The participants are involved simultaneously in several energy fields, mainly conventional and RES technologies.

The focus of know-how and expertise e survey results show that the in B-I seems to be the advanced conventional technologies.

For half of them RES technologies is one of their field of expertise.

The least expertise is in the field of bioenergy, which is relatively underdeveloped in South and Southeastern Europe.

**Background / Field of expertise**



*Only half of the participants of the survey answered the questions about their knowledge and expertise of a specific KET*

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## RES

According to Eurostat official data from December 2012 the share of renewables in Romania, % in the gross energy consumption, almost reached the EU targeted quota, **BUT** issues rise related to the electricity grid capacity to support this fluctuant type of energy produced by RES – mainly wind and solar

Share of RES in the gross energy consumption %	Achieved 2012	EU Target 2020
Romania	22.9	24

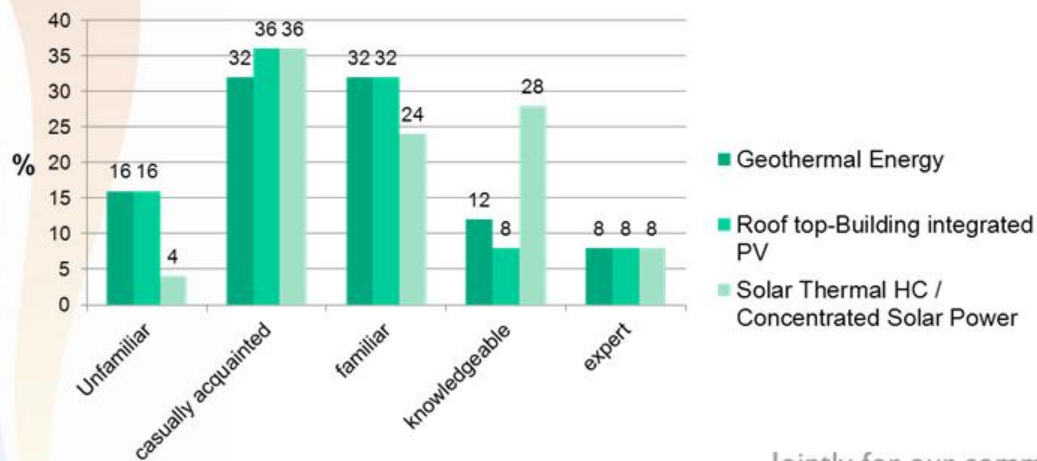
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# RES

Considering B-I KET as result from WP4.1 workshop, the online survey indicates that there is still relatively little exposure to information about RES in the B-I region, 40-52% of the respondents being unfamiliar or only casually acquainted with (geothermal and solar) and only about a quarter are knowledgeable or experts in the field.

Participants in the survey have responded that they are much better prepared to work in the field of Solar Thermal HC / Concentrated Solar Power 36% being knowledgeable or experts, compared with 20% in geothermal and 16% in Roof top-Building integrated PV.

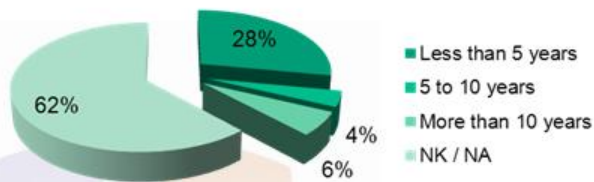
**Level of Expertise: RES**



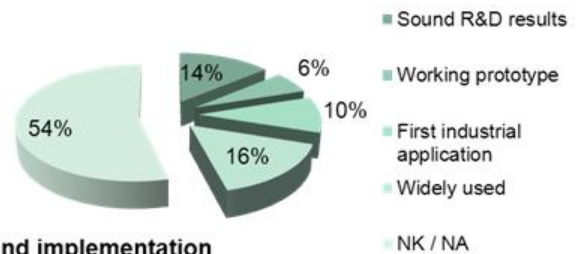
# RES - Geothermal

The low level of expertise and lack years of experience is influencing also the promotion and development of the geothermal technologies, even if potential exists.

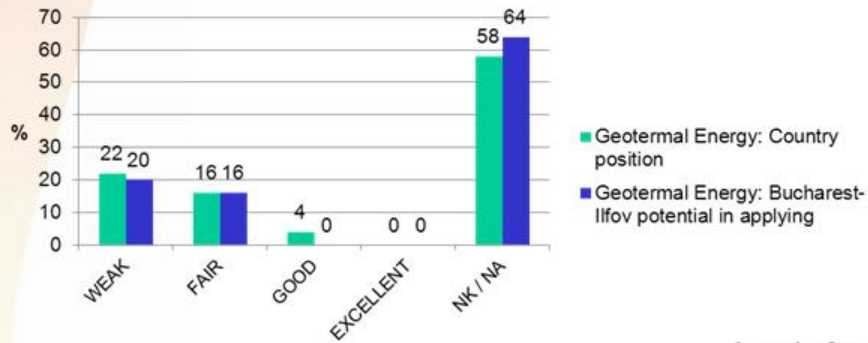
**Years of experience in Geothermal Energy**



**Geothermal Energy: Current level of technological development**



**Geothermal Energy: Development and implementation potential**

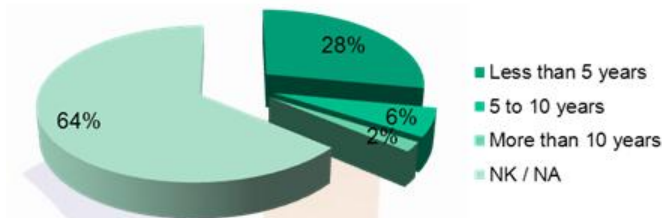


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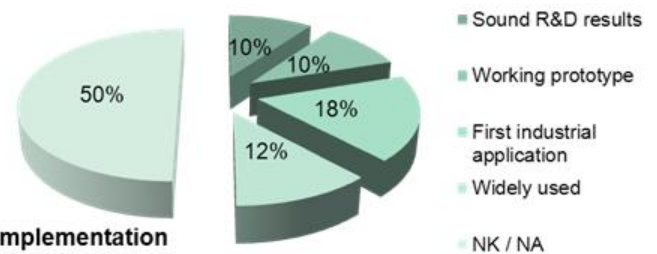
# RES - Roof top-Building integrated PV

The low level of expertise and lack years of experience is influencing the promotion and development of the roof-top PV, even if potential exists.

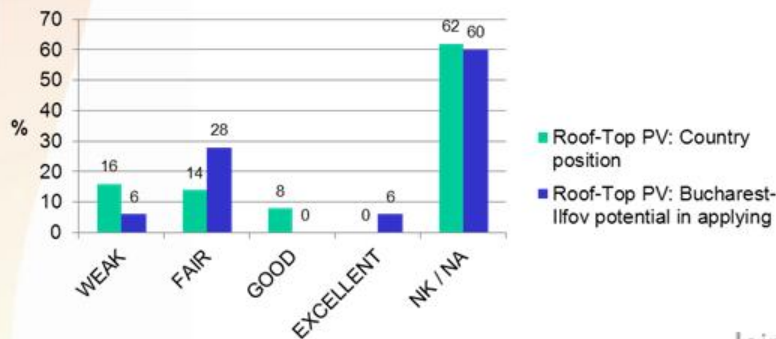
Years of experience in Roof-Top PV



Roof Top PV: Current level of technological development



Roof-Top PV: Development and implementation potential

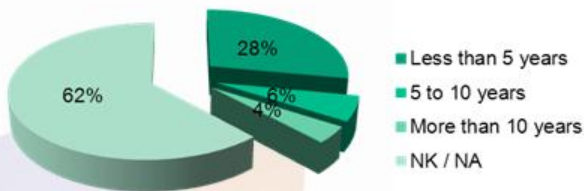


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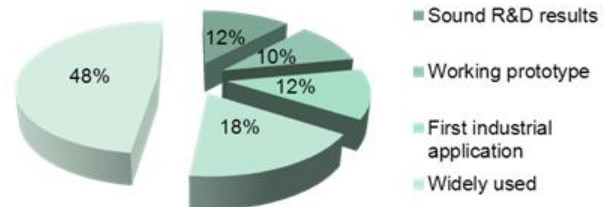
# RES - Solar Thermal

A higher level of expertise and additional years of experience, compared to geothermal and roof PV is positively influencing the promotion and development.

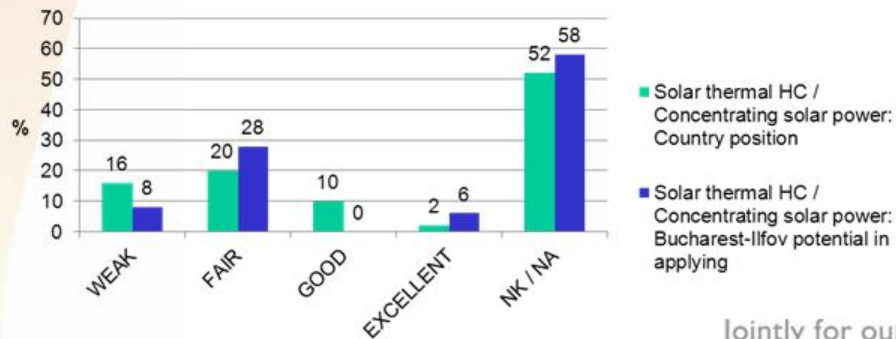
**Years of experience in Solar thermal HC / Concentrating solar power**



**Solar thermal HC / Concentrating solar power: Current level of technological development**



**Solar thermal HC / Concentrating solar power: Development and implementation potential**

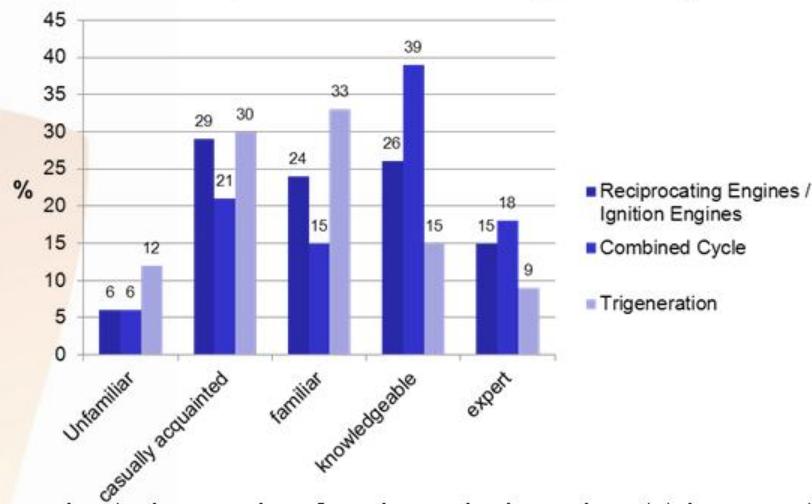


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## Conventional technologies

The majority of the respondents are knowledgeable and experts 41-57% in the cogeneration of heat and power (CHP) with combined cycle or engines technology.

**Level of expertise: Conventional Energy Technology**

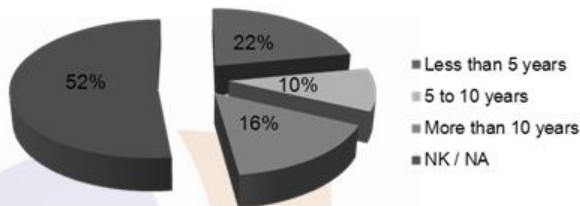


¼ of the respondents have also few knowledge about trigeration.

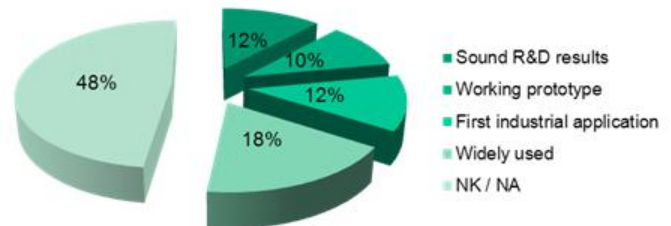
# Conventional - Reciprocating / Ignition engines

The relatively high level of expertise and experience is positively influencing the development of the conventional technologies (mainly engines, combined cycle)

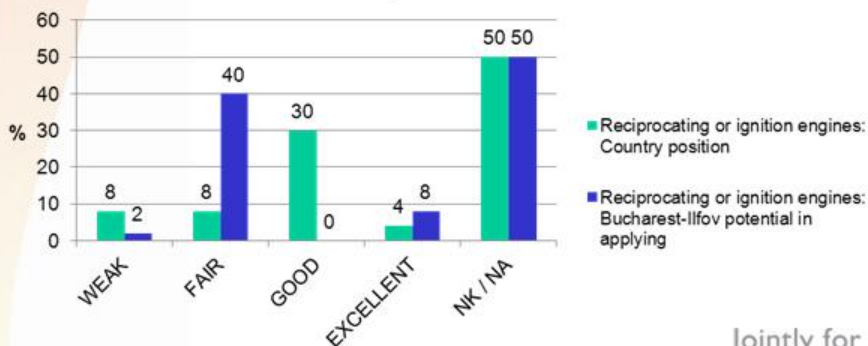
Years of experience in Reciprocating or ignition engines



Reciprocating or ignition engines: Current level of technological development



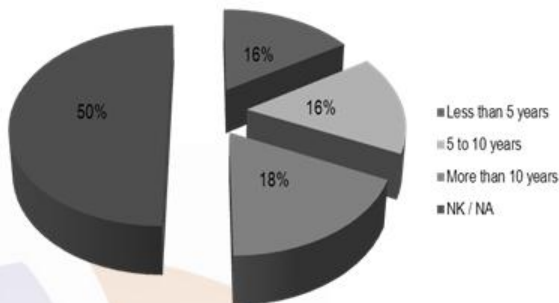
Reciprocating or ignition engines: Development and implementation potential



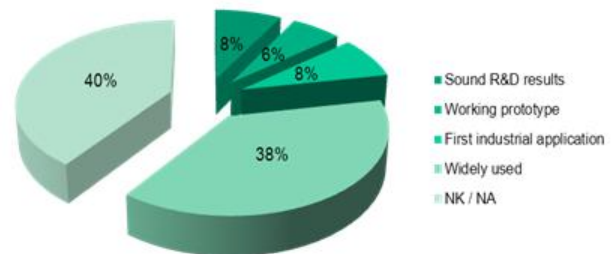
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# Conventional – Combined Cycle

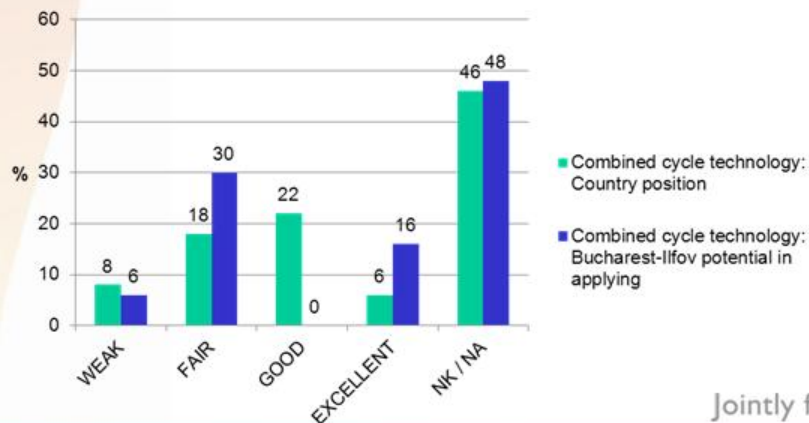
Years of experience in Combined cycle technology



Combined cycle technology: Current level of technological development



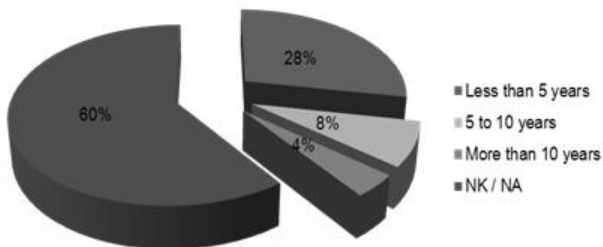
Combined cycle technology: Development and implementation potential



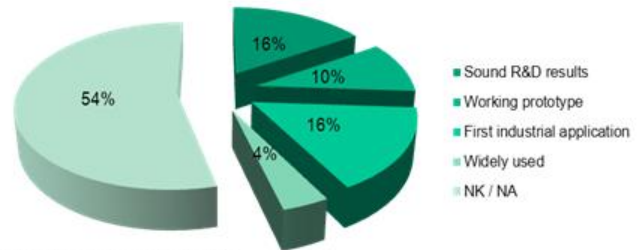
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# Conventional – Trigeneration

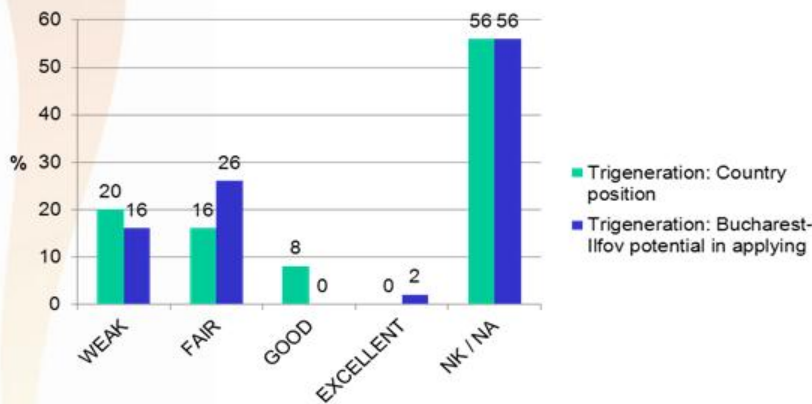
Years of experience in Trigeneration



Trigeneration: Current level of technological development



Combined cycle technology: Development and implementation potential

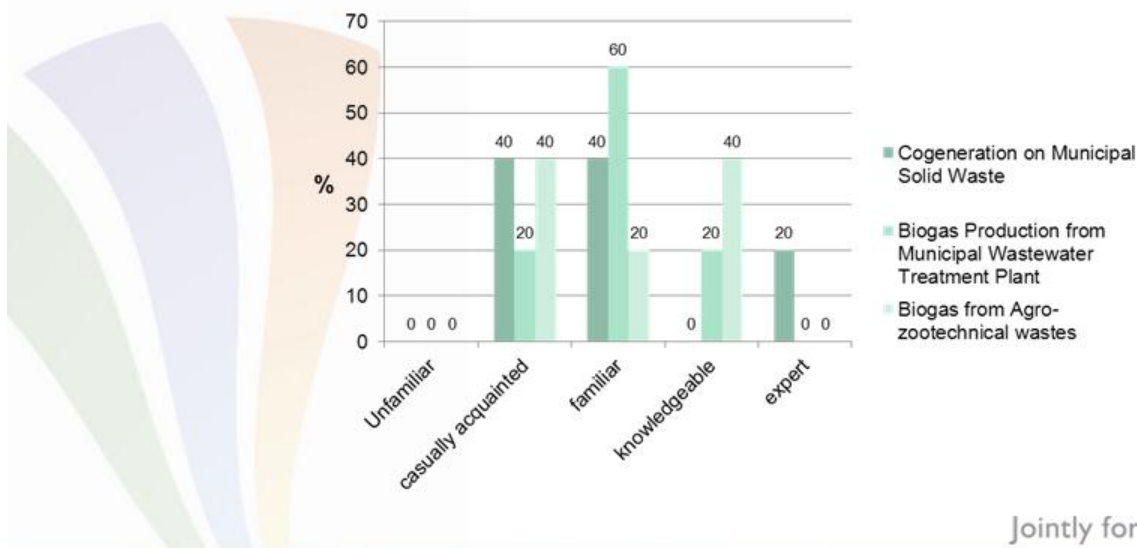


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# Bioenergy

Although only around 50 people from all of the respondents are engaged in biogas technologies, expert knowledge in the field is prevalent. Between 25 and 30% of the participants in the survey are experts in biofuels and biogas, while another 50% are either quite knowledgeable or familiar with this area.

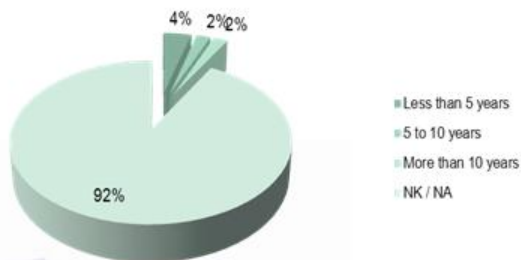
**Level of expertise: Bioenergy**



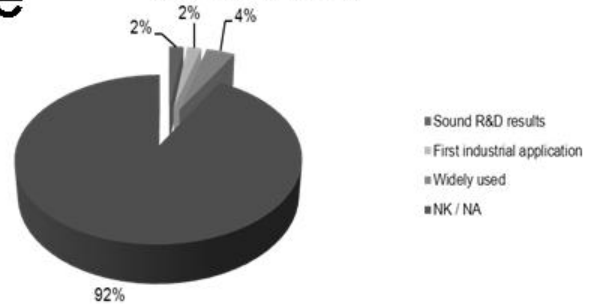


# Bioenergy – Cogeneration on Municipal Solid Waste

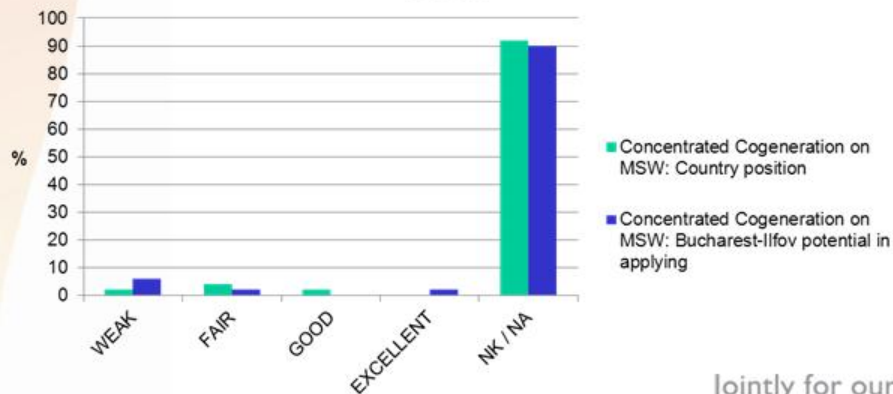
Years of experience in Concentrated Cogeneration on MSW



Concentrated Cogeneration on MSW: Current level of technological development



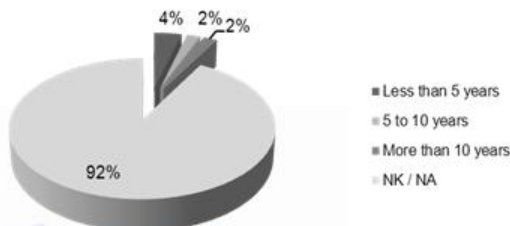
Concentrated Cogeneration on MSW: Development and implementation potential



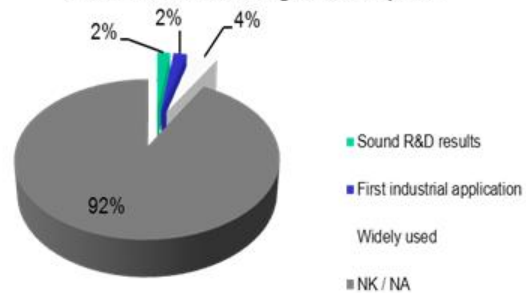
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# Bioenergy – Biogas from Municipal wastewater

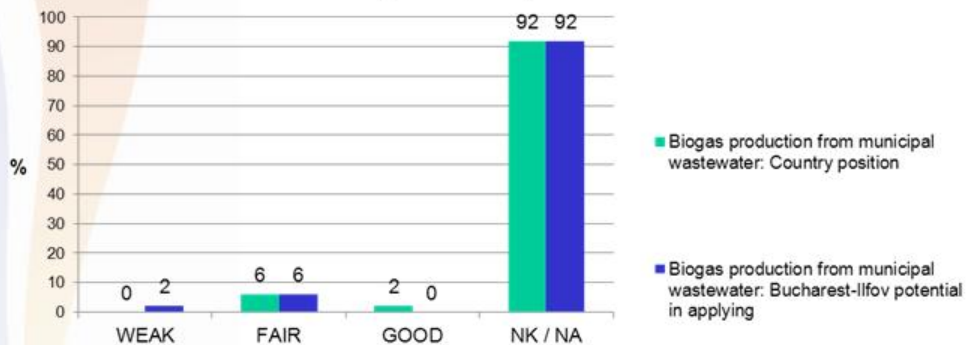
Years of experience in Biogas production from municipal wastewater



Biogas production from municipal wastewater: Current level of technological development



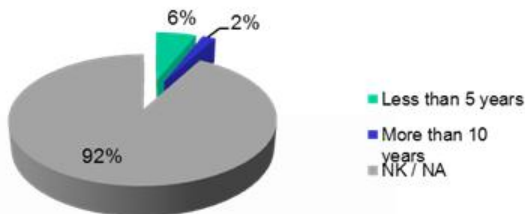
Biogas production from municipal wastewater: Development and implementation potential



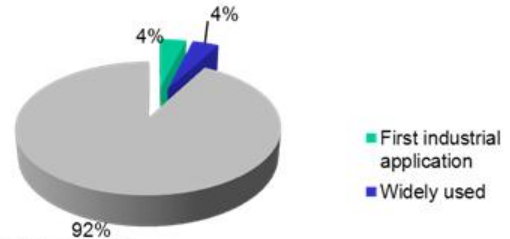
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# Bioenergy – Biogas from agro-zootechnical wastes

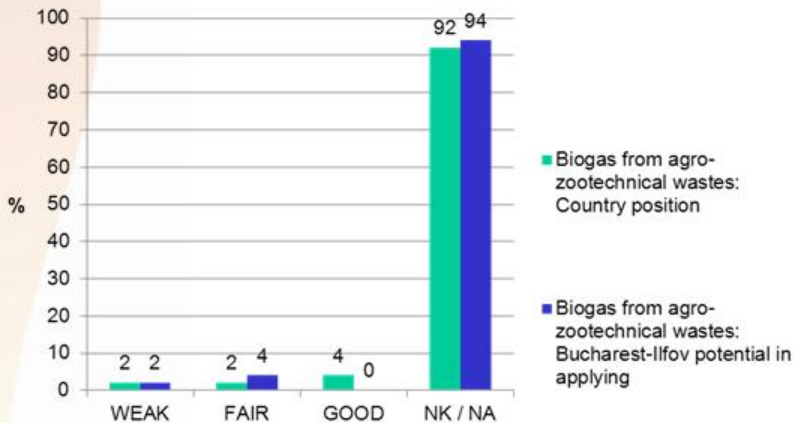
**Years of experience in Biogas from agro-zootechnical wastes**



**Biogas from agro-zootechnical wastes: Current level of tehnological development**



**Biogas from agro-zootechnical wastes: Development and implementation potential**



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## Further analysis to be developed in the report

- Drivers impact on development and deployment until 2020
- Barriers impact on the development and deployment until 2020
- Potential impacts of the further development and deployment by 2030

**will be analyzed and briefly resumed for each identified KET technologies in Bucharest-Ilfov region**

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# Conclusions

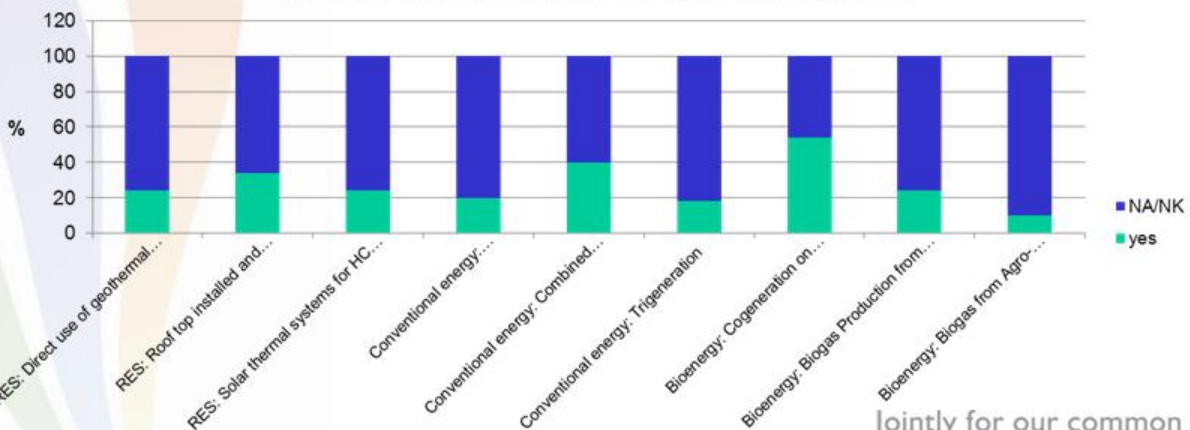
Most of the questions in the survey were answered by a little more than half of the people which were interviewed – thus having an influence upon the results analysis.

The overall result reveals that few of the energy stakeholders are experts in advanced renewable energy technologies, while more than half have profound understanding of conventional efficient fossil fuel methods or the classical renewable sources including solar thermal.

The fewer numbers of energy-producing businesses participating in the survey influenced the structure of the answers, but we still can underline the followings:

As expected B-I will focused on using the energy potential from the massive quantity of Solid Municipal Wastes, the latest conventional energy technologies based on natural gas and roof-top PV for buildings (where suitable) – also combined with an increased use of alternative fuels (biogas), solar thermal and geothermal energy potential.

**Three most promising energy technologies that have the greatest potential to contribute to the optimisation of energy consumption in your city / region**



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## EXPERTS GROUP

- Ph.D. (Eng.) Marian DOBRIN
- Dipl. Eng. Raluca CÎNDEA
- Dipl. Eng. Delia MĂRĂȘESCU
- Dipl. Eng. Mădălina ANASTASIU
- Dipl. Eng. Alexandra IGNAT

The EXPERTS GROUP was selected by technical and financial offers comparison

Several meetings were organized with the experts group to explain the project and the tasks.

These experts have guidance on the WP and specific tasks they have to perform and they have already been informed about their obligations.

All of them participated and were involved in the “Key Energy Technologies” Workshop, September 2013

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Thank you for your attention!



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