

## **Work Package 4**

### **Elaboration of studies**

#### **Deliverable 4.6.4**

##### **Cost estimation study for Petrich installation**

**Beneficiary 6 (PB6) - Municipality of Petrich**

**INTERREG V-A COOPERATION PROGRAMME:  
GREECE – BULGARIA 2014-2020**

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*The Project is co-funded by the European Regional Development Fund (ERDF) and by national funds of the countries participating in the Cooperation Programme Interreg V-A “Greece-Bulgaria 2014-2020” .*

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## Summary Report

Cost estimation in project management is the process of forecasting the cost and other resources needed to complete a project within a defined scope. Cost estimation accounts for each element required for the project and calculates a total amount that determines a project's budget.

Cost estimation is needed to provide decision-makers with the means to make investment decisions, choose between alternatives and to set up the budget during the front end of projects. For this, estimates made by vendors and contractors need to be validated by clients as well. In later phases of the project, the budget estimate is used as a baseline to assess the performance of a project.

Related to this principle, it is always challenging to collect and read the huge amount of cost data, which doesn't help with the decision making. Analyzing and visualizing the cost data opens the doors to making the data useful and meaningful.

## 1. Estimation of costs for the procedures carried out from Petrich Municipality

For the municipality of Petrich, the initial project budget was 56 847,00 euros.

Due to certain circumstances, some of the costs under WP1 were not absorbed. The 3-year-old Covid crisis and the closing of state borders due to the pandemic and people's fear had a particular impact.

The total budget is 54 802,00 euros.

The main procured activity for the municipality of Petrich in the project was the implementation of a pilot drilling - a construction of a drilling well for non-potable water in the area "The Church", near the village of Kavrakirovo, Petrich municipality - a new facility.

Due to new changes in Water legislation, after long administrative vicissitudes, a Permit for water abstraction was issued and the drilling well for non-potable water was built with the technical name "Tube well (TC-1) with a shaft" and it was put into operation on 6.April.2020.

For the construction of the new groundwater facility on the territory of land property of the village of Kavrakirovo, municipality of Petrich, district of Blagoevgrad and its use for the purpose of independent water supply for the cultivation of agricultural land in the form of permanent use, Petrich municipality passed all procedures described below and the documents have been issued for this purpose as follows:

- Submitted to the director of Regional Inspectorate for Environmental Protection-Blagoevgrad— Notification from 11.04.2016, under Art. 4, para. 1 of the Ordinance on Environmental impact assessment for an investment proposal with the name "Construction of a drilling well in a land property No. 001039 in the land of village Kavrakirovo, Petrich Municipality, Blagoevgrad District and collection of data from monitoring for groundwater irrigation".

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- Deposited additional requested information by letter from 20.05.2016 of Regional Inspectorate for Environmental Protection-Blagoevgrad.
- Deposited additional requested information by letter from 23.06.2016 of Regional Inspectorate for Environmental Protection-Blagoevgrad.
- The director of the Regional Inspectorate for Environmental Protection-Blagoevgrad informs the municipality of Petrich in writing about the necessary actions that must be taken in accordance with chapter six of the Environmental Protection Act in a letter dated 07.06.2016.
- In order to assess the need to carry out an Environmental impact assessment, the municipality of Petrich submits a written request according to the template according to appendix No. 6 to the director of the for Environmental Protection-Blagoevgrad with entry no. №2220/05.07.2017, to which applies:
  - one copy of detailed information according to Annex No. 2 to Art. 6 of the Ordinance on the conditions and procedures for carrying out an environmental impact assessment (EIA) on paper and electronic media. For the preparation of the Request/Information according to the EIA Ordinance, a contract was concluded with a contractor in the amount of BGN 700.00, paid from the budget of Petrich Municipality
  - information on the method of payment of the fee of **BGN 500.00** (paid from the budget of Petrich Municipality) for carrying out a procedure, according to the Tariff for the fees collected in the system of the Ministry of the Environment and Waters.
- For the investment proposal "Construction of groundwater equipment (borehole) in land property No. 001039 in the land of the village of Ravrakirovo, Petrich municipality, Blagoevgrad district and collection of data from mining monitoring for groundwater irrigation", the director of Regional Inspectorate for Environmental Protection-Blagoevgrad issued Decision No. BD-76-PR/07.08.2017 on assessment of the need to carry out an environmental impact assessment — **not to be carried out**.
- Submitted to the director of the West Aegean River Basin Directorate-Blagoevgrad — Application for the issuance of a permit for groundwater abstraction, through new groundwater facilities dated 20.10.2017 with attached to it the required documents in accordance with chapter six of the Water Law. Fee paid in the amount of **BGN 250.00** paid from the budget of Petrich Municipality
- By letter dated 22.11.2017 the director of the West Aegean River Basin Directorate-Blagoevgrad notified the municipality of Petrich that it is necessary to submit additional documents, information and corrections within two months of receiving the letter, otherwise the application will not be considered and no procedure for issuing a permit will be opened (Art. 61, Para. 4 of the Civil Code).
- The Municipality of Petrich submits a request for an extension of the given two-month period for the submission of additional documents, information and corrections in a letter with ex. No. PP- 01-185/22.11.2017 of the director of the West Aegean River Basin Directorate-Blagoevgrad.

By letter dated 05.02.2018, the director of the West Aegean River Basin Directorate-Blagoevgrad notified the municipality of Petrich that the application remains without comments, since the deadline is mandatory and cannot be changed. In this connection, on the basis of Art. 61, para. 4 of Water Law — Application dated 20.10.2017 remained without consideration and the procedure for issuing a permit will not be opened.

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This imposed a modification of the project budget (Del.3.6.3.) (Mod).(Added) and to carry out the necessary hydrogeological studies and measurements and prepare the necessary documents for issuing a permit for water abstraction a contract was concluded with HYDRORESOURS Ltd worth **1180,00 euros**, paid from the project budget (Del. 3.6.2)

The Application for the issuance of a permit for groundwater extraction, through new groundwater facilities was resubmitted to the director of the West Aegean River Basin Directorate-Blagoevgrad on 20.06.2019

On the basis of the above, the director of West Aegean River Basin Directorate-Blagoevgrad issued to Petrich Municipality Permit No. 41520106/25.09.2019 for groundwater abstraction through new groundwater facilities.

For the construction of the new groundwater facility, a contract was concluded with VK Petrich for "Engineering - design, exercise of author's supervision and implementation of construction and installation works for the Construction of Pipe Well (TC1) with a shaft in a land property in the village of Kavrakirovo, worth **42250,00 euros** paid from the project budget (Del. 3.6.2)

The contractor has prepared the design documentation with information on the method of construction of the borehole and the necessary drilling equipment. A description of the lithological varieties, the parameters of the water-bearing environment, as well as a qualitative and quantitative analysis of the groundwater was made. An assessment of the operational resources of the facility has been carried out and the technical and possible extraction of groundwater has been established, which will be guaranteed with the appropriate pumping equipment. The B&Q has been updated.

After completion of the construction activities at the site, Municipality of Petrich notified the director of the West Aegean River Basin Directorate-Blagoevgrad, and he ordered the implementation of:

- the verification of the conformity of the documents under the Regulation №1/ 10.10.2007 and the performed activities with the parameters and conditions in the issued Permit;
- the inspection of the installed water meter and device for measuring the water level;
- measurement of the static water level in the constructed facilities at the time of the inspection; measurement of the maximum flow rate and the decrease of the water level at this flow rate at the moment of the inspection by means of the installed equipment of the facility for operation and monitoring ;
- sealing of water meter.

For the results of the inspection, according to the requirements of the Regulation №1 / 10.10.2007, employees of West Aegean River Basin Directorate Blagoevgrad prepared and signed a Protocol of Findings dated 31.07.2020 for acceptance of the new water intake facility - pipe well.

- After completing the works in order to putting the installation into operation, the Chief Architect of Petrich Municipality has issued a Certificate №9 dated 04.06.2020 for commissioning of the object "Pipe Well (TC-1) with shaft" .

In conclusion, after the issuance of the last two documents - Findings Protocol dated 31.07.2020 for acceptance of the water intake facility - pipe well and Certificate №9 for commissioning, Municipality of Petrich has the right to take water from the new groundwater facility.

**The tests for the quality composition of the groundwater** are carried out in an accredited laboratory, having ISO 9001 and 9002, as the test methods are in compliance with the values of the ecological threshold for groundwater under Regulation 1 No.1 of 10.10.2007 on the exploration, use and protection of groundwater.

On 31.07.2020 the acceptance commission inspected and accepted the facility and the new facility is registered in **West Aegean River Basin Directorate - Blagoevgrad**. ( Del.D3.6.3; D5.6.2 )

- A Programme for monthly and annual monitoring of the groundwater quality and exploration of the groundwater abstraction facility has been developed after the necessary tests and evaluation of the operational resources of the well have been performed. (Del. 5.6.1)
- A Methodology is developed for determining the best site for the groundwater drilling well considering the technical, environmental, social, financial and institutional issues. (Del.4.6.1)
- An Analysis of the environmental and social benefits of building the new facility is done. (Del.4.6.3; Del.5.6.3)
- A final report on the technical design and operational resources of the new facility is done (Del.2.6.4)
  
- The total amount of pumped groundwater until 31.12.2021 is about 8120 m3.
  
- A Proposal for simplification of the required permit process in Bulgaria has been prepared. (Del.4.6.5)

The Permit for groundwater abstraction issued on 25.09.2019 to Petrich Municipality proved as follows:

- the water abstraction is sustainable
- the water abstractor has a reasonable need
- the water abstractor will use the water efficiently

The assessment of the technically possible flow rate of the new groundwater intake facility shows that the required average daily flow rate for the needs of the Municipality of Petrich of 0.66 l/ sec can be reached without a detrimental impact on ecology.

## Conclusions

Project management encompasses different knowledge areas, properly integrated and coordinated to ensure that a project meets the stakeholder's expectations and is completed within a set timeframe and under a specified budget. The project management knowledge areas include integration and communication management, time management, quality management, human resource management, risk management and cost management.

Cost management includes the processes required to ensure that the project is completed within the approved budget. It embraces activities such as resource planning, cost estimating, budgeting and cost control. These activities are repeated in a closed loop and take place during the whole project lifecycle. Cost estimation forms a pylon in the cost management process and as a result in project management.

The Municipality of Petrich implemented and executed the activities within the approved budget of 54 802,00 euros.

- **Financial implementation of the project**
- **Total budget: 54 802,00 euros**

Three verifications were made as follows:

1. Reporting period: 15/3/2018 – 31/01/2020

Declared amount: 38 100,46 EUR    Certified amount: 38 100,46 EUR    Difference: 0,00 EUR

2. Reporting period: 01/2/2020 – 28/02/2021

Declared amount: 14 536,39 EUR    Certified amount: 14 533,14 EUR    Difference: 3,25 EUR

3. Reporting period: 01/3/2021 – 20/07/2022

Declared amount: 1 000,00 EUR    Certified amount: 1 000,00 EUR    Difference: 0,00 EUR

**Total certified amount: 53 633,60 EUR**