**Czech Development agency**

 **„Temporary Expert Assignment “**

**waste management in the city of ČAČAK**

Prepared by: Antonín Hořín (Valašské Meziříčí)

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**Temporary expert assignment (within the framework of transfer of Czech transitional expertise)**

**Title in Czech Language:**

Nakládání s komunálním odpadem ve městě Čačak v Srbsku

**Title in English Language:**

Waste management in the city of Čačak in Serbia

**Applicant:**

Grad Čačak, local self-government; Čačak; Župana Stracimira br. 2, Serbia

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**Partner Institutions:**

Lead partner institution:

Město Valašské Meziříčí, Náměstí 7, Valašské Meziříčí, 757 01, Czech Republic

Contact person: Antonín Hořín

Email: horin@muvalmez.cz

Phone: +420 727 968 411

Cooperating partner institution:

Město Prachatice, Velké Náměstí 3, Prachatice, 383 01, Czech Republic
Contact person: Ing. Bc. Robert Zeman

Email: robert.zeman@centrum.cz

Phone: +420 602 931 196

(Cooperating partner institution will help with creation of the main project activities, especially by providing expert (Robert Zeman) in waste management.)

**Estimated Area of Expertise:**

Town of Valašské Meziříčí has a great experience about waste management. During the others meeting with Serbian experts have identified requirement in communal waste management. Due to elaborate collection system and system of primary selection in Valašské Meziříčí is separation of communal waste in Valašske Meziříčí on high level. However, this progress has not made automatically. Valašské Meziříčí has struggled with similar problems as city of Čačak is solving right now. Town of Valašské Meziříčí has implemented a lot of improvements and measurements, which streamlined the waste management.

The town of Prachatice has also great experiences about waste management and collection system. During the 90s town in cooperation with the others region towns established new dump. Due to this activity, the town of Prachatice has become important regional actor in waste management. Compared with Serbian waste management system it is possible to identify a lot of similarities.

**Expected Start and End Dates:**

10/2017 – 03/2018

**Expected Partner’s Institution Type of Cooperation:**

1. Logistic preparation of seminars and workshops (the city of Čačak will provide all necessary administration support – conference facilities, computing, papers etc. for free)
2. Logistic arrangements of Czech experts stay in Serbia (guide of Czech delegation in terrain, selecting the most important places of waste management) – this work will ensured by paid Serbian experts from this project.
3. Communication with local providers of waste management (especially with local provider of collection company and company, which manages the end device) – this work will ensured by paid Serbian experts from this project.
4. Cooperation with analyzing of current situation and providing of the necessary items (maps of containers, documents about waste management system in Čačak town, contracts with external services etc.)

C**ontext:**

The city of Čačak has been dealing with solid communal waste for more than a decade. The problem has been dealt to the full capacity, from building regional sanitary waste land, i.e. regional system for managing of communal waste, to the smallest details connected to development of primary selection on the territory of the city, which is in fact, the base of every serious consideration of dealing with communal waste. When Serbia is in question, Čačak has more than well-developed primary selection and it covers almost 15 000 households, mostly in urban area and suburban settlements. The city of Čačak wish to increasing degree of primary selectionon a higher level so as to have better success in waste selection.

**Expected Outcomes and Results by the Applicant:**

**Primar project goal :**

Primary objective of this project is improvement of the collection system and separation of municipal waste in Čačak city. City Čačak has built terminal waste facility (a dump), however it could be very appropriate to improve the collection system from originators (city citizens) both technically and motivationally. The system should be set up first to avoid the waste production (this is general goal on the nation level), second to motivate citizens to increasing sorting of waste, and at least in these major items: plastic, glass, paper. Very suitable and effective is also deployment of system separation of bio trash.

These items, in case of well set up system, would not have to finish without utility on a dump or in an incinerator, but it could return into production system (production of packaging or paper products. Created materials by separation of bio trash would be use both energy (bio-gas station) and for creation of the biomass usable at agricultural or at maintenance of public green.

Czech Republic is a long-term leader in separation and reusing of waste. System has been implemented in 90s and after the 25 years of development it has brought positive results. In case of Čačak will be possible to rely on good practice in town of Valašské Meziříčí and Prachatice, where the waste system achieves high levels. Within the wide scale of separated items is in these towns instaled dense network of waste containers for separated waste. Gradually are containers (with capacity 1100 liters) removed by new semi-subterranean and all-ground containers with better capacity (up to 5000 liters). In these containers are also installed an infrared sensor, which are controlling fatigue of the containers and using the wireless technologies is all information sending on the central dispatching. There is all data calculated and a collection routes are optimized. This process is a part of the concept Smart City, which is modern attitude into town development using a smart solution, such as smart application, sensors, data collection etc.

Positive factor for accomplishing project goal is also long term cooperation between town of Valašské Meziříčí and city Čačak. These twining towns regular cooperate by their political representatives and also by officers of municipality.

**Expected time schedule and activities:**

**Activity 1 – Analyzing of current situation and introducing of general problems**

**Term:** 10/2017

**Participants:** Mr. Chajdrna, Mr. Studeník, Mr. Zeman, interpreter + Serbian experts

**Duration:**  5 days

**Description:**

Within this development project, the expert team from Czech Republic with experts from Serbian Čačak will apprise with default status during first project meeting on autumn 2017. The aimed of this meeting will be both technical issues (quantity, structure, location of waste containers collection routs etc) and economically legislatively issues. This project meeting will be covered by project team contained by Mr. Chajdrna, Mr. Studeník, Mr. Zeman and interpreter.

**Outcome of activity:** the expected results of this activity will by detail analyze of current situation in city of Čačak. This analyze will have at least 10 pages written in Czech language and translated into Serbian.

**Activity 2 – Creation of *„Proposal for improvement of the waste separation and management system in the city of Čačak“***

**Term:** 11/2017 – 02/2018

**Participants:** Mr. Chajdrna, Mr. Zeman, Mr. Studeník

**Duration:** Mr. Chajdrna – 3 days

 Mr. Lysák – 5 days

 Mr. Grujović – 9 days

 Mr. Gavrilović – 9 days

**Outcome of activity:** “*Proposal for improvement of the waste separation and management system in the city of Čačak.”*

**Description:**

This activity is

**The general objectivities of this study**

* analysis of the problem area at contemporary with regards on technical and organizational solutions and economic complexity of the system
* proposal of solutions, lead for streamlining of systems with emphasis on compliance of hierarchy in waste management – maximizing waste utilization and consistently reducing their landfill

**Scope of the study**

The primary aim of this study will be waste separation system and its streamlining at waste management and minimization of landfilling. These objectives are focused on environmental issues and enhance quality of living in city Čačak. As well as maximum using of reusable raw materials.

* ensure the separation collection of paper, plastic, glass and metals in the city
* reduction landfilling of the biodegradable municipality waste
* secure separated collecting and reusing of bio trash at least vegetable origin in general systems

**Proposed structure:**

1. The general information about city´s territory in the context of the region

2. Description of current situation about waste management (detailed analysis):

* Production of the municipality waste
	+ the main waste streams, ie. separately collected usable components (paper, plastic, glass, metal, beverage carton), bio trach, mixed municipality waste, bulky waste, hazardous components of municipality waste
	+ collection system for usable components of municipality waste (containers, bags, collection yards, mobile collection)
	+ collection system for the others components of the general system - bio trash, mixed municipality waste, bulky waste and hazardous waste)
	+ collection and transport of waste
	+ next using of waste (reusing, modification, removal etc.) with regards on analysis of the final infrastructure and the relations between these facilities and city Čačak
	+ using and modification of electricity devices, batteries and bulbs
	+ further activities in waste management (involvement of local entrepreneurs, schools etc).

3. Management of present waste management in the city

4. Cooperation with citizens and awareness as well

5. Economic analysis about waste management in the city

6. Conclusion

* specification of major deficiencies in waste management (technical, organizational, economic) with regard to the results
* summary of recommended tools and measures
* solution of waste management in connection with the Waste Management Plan

**Proposed scope of study:**

* at least 25 pages in Czech language translated into Serbia
* the document will be approved by Čačak´s city council after the activity 3

**Activity 3 – Presentation and implementation of the study**

**Term:** 03/2018

**Participants:** Mr. Chajdrna, interpreter + Serbian experts

**Duration:** 5 days

**Description:**

During the spring 2018 project meeting will delivered by project team (contained by Mr. Chajdrna and interpreter) both analytical and design part, sample materials for environmental education and technical materials for further development of the waste management (for example drawing of proposed waste containers). During this activity will be held several meetings with local stakeholders and experts about possibilities and city development in case of waste management. The study will be present to Serbian experts and will be organized discuses about further implementation of this document in practice and expected outcomes.

**Outcome of activity:** Proposal for further optimization in waste management area and its implementation. These proposals and solutions will be part of *Proposal for improvement of the waste separation and management system in the city of Čačak* as a final part with at least 6 practical examples. This part will have at least 6 pages written in Czech language and translated into Serbia.

**Team Members:**

**Mgr. Václav Chajdrna** – lead expert of project; Head of Department of the communal services in Valašské Meziříčí

**Michak Lysák –** waste management expert; officer of Department of the communal services

**Ing. Bc. Robert Zeman** – project expert; political representative of city of Prachatice; responsible for the area of waste management

**Ing. Zdeněk Studeník** –administration help; Head of the Financial Department in city of Valašské Meziříčí

**Mgr. Antonín Hořín** – project coordinator; officer of the Department of town development in Valašské Meziříčí

**Lubomír Furmánek** - translator + interpreter

**Vladimír Grujović** – Serbian expert on city development and strategical leadership; Head of Local Economic Development Office in city Čačak

**dipl. Ing. Bojan Gavrilović** – Serbian expert on waste management and rural development; Head of the Unit for agriculture in city Čačak

**Expected Amount of Work in Total:**

Mr. Chajdrna – 160 hours (10 days in Serbia + 80 hours work in Czech Republic)

Mr. Lysák – 80 hours (work in Czech Republic)

Mr. Hořín – 170 hours (work in Czech Republic)

Mr. Studeník – 92 hours (5 days in Serbia + 52 hours work in Czech Republic)

Mr. Zeman – 480 hours (5 days in Serbia + 400 hours work in Czech Republic)

Mr. Grujovič – 150 hours (10 days in Serbia + 70 hours work during the activity 2)

Mr. Gavrilović – 150 hours (10 days in Serbia + 70 hours work during the activity 2)

**Amount of Work per Expert in Total:**

Total hours of experts = 1190 hours of total work.

**Amount of Work per Team in Total:**

Total hours of experts = 1337 hours of total work including also interpreter and whole project team.

**Funding:**

More information in Annex III of the Contract

**Complementarity:**

Town of Valašské Meziříčí has created with Čačak a several projects financed from Czech Development Agency.

in 2015:

* “*Experience Exchange and Transfer of Good Practice in the Field of E-Governance Valašské Meziříčí – Čačak for Development of Good Governance*”
* *“Transfer of Good practice Crisis management and elimination of consequences of floods from Valašské Meziříčí to Čačak”*

in 2016:

* *“Development of Good Government in Cacak town, based on the experiences in Valašské Meziříčí”*

in 2017:

* *“Project management in Čačak city and application according the experiences of Valašské Meziříčí.”*

Both towns have realized a lot of others activities such as student exchange, culture cooperation etc. Town of Valašské Meziříčí also cooperated during the remediation work after the flood in Serbia (town sent a humanitarian aid).