

**TERMS OF REFERENCE**  
**LOCAL AGRICULTURAL/ENVIRONMENTAL AND ECONOMIC/TECHNOLOGY EXPERTS-**  
**CIRCULAR ECONOMY IN WINE INDUSTRY**

**I. PROJECT TITLE**

Development of recycling system for organic waste management in grapes and wine production in Tikveš region (Municipality of Negotino, Kavadarci & Demir Kapija)

**II. DURATION**

Number of estimated working days	80 working days
Contact start date:	15 <sup>th</sup> November, 2022
Contract end date:	15 <sup>th</sup> July, 2024
Duty station:	Skopje

**III. BACKGROUND**

The organic waste is considered as a problem which needs additional work, time and investments by the grape producers. Conventional treatments of winery waste are becoming increasingly expensive, demanding significant amounts of effort, resources and energy for safe waste discharge. Therefore, the need to recycle, reuse and recover energy and valuable chemicals from winery waste and wastewater becomes apparent.

The developed project “Development of an organic waste management in grapes and wine production in Tikveš region”, implemented by GIZ ORF MMS, Bovin, and CRPM, is about finding a sustainable alternative for dealing with organic waste from wine production in North Macedonia. Currently over 100.000 t of waste is ‘destroyed’ in a very basic, not ecological way, being burned out at the vineyards during the winter months. It produces high negative effects on the air quality in the whole region but also on the quality of soil and water and environment in general. It also negatively impacts the financial sustainability of the industry, because companies are losing immense potential for additional income from selling by-products of the recycling process and not being able to start a line of organic production. Therefore, Bovin Winery – a privately-owned winery in North Macedonia – and the GIZ undertake this initiative to develop an organic waste management in grapes and wine production in Tikveš region.

Within the joint project, implementing partners (GIZ, Bovin, and CRPM) plan to set the preconditions (e.g. institutional, legal and framework conditions) for cost effective treatment and reuse of organic waste from the vineyards in this region of N. Macedonia and to increase significantly the amount of organic waste collected as processable resource to allow for economy-of-scale effects. Overall, the project will contribute to setting up the sustainable framework conditions by thoughtfully including all stakeholders in charge of framework conditions to improve the policy and institutional set up for introduction of circular economy and zero waste concept in wine production, and by piloting the selected technology for processing and deriving the economically viable business model that can be implemented in the long run. The project aims to dissolve current environmentally damaging and unsustainable practices in wine production and to introduce circular economy principles.

The underlying scope of this project is Circular economy. Circular economy involves reduction of use of materials, redesign of materials, products, and services, and educes “waste” as an input i.e. resource to manufacture new materials and products. Circular economy involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended. In practice, it implies reducing waste to a minimum. The Circular economy offers an opportunity to reinvent the local economy, making it more sustainable and competitive. This will bring benefits for the

Macedonian business, industries, and citizens alike. With circular economy approach, the plan is to make the Macedonian's economy cleaner and more competitive. Moving towards a more circular economy brings benefits such as reducing pressure on the environment, improving the security of the supply of raw materials, increasing competitiveness, stimulating innovation, and boosting economic growth. Namely, circular economy becomes a priority topic for the Government in Republic of North Macedonia, especially with the adoption of the Green Agenda for Western Balkans within the Berlin Process.

Currently, there is no functioning management system for appropriate collection and treatment of the organic waste from the Macedonian vineyards. The management of the organic waste recycling is deficient on all levels, while the framework conditions are yet not set properly to allow for the appropriate management to be established. Conventional treatments of winery waste are increasingly expensive, demanding significant amounts of effort, resources, and energy for safe waste discharge. Therefore, the need to recycle, reuse and recover energy and valuable chemicals from winery waste and wastewater becomes apparent. Among different types of by-products and waste generated in production including grape pomace, lees, seeds, stalk, and dewatered sludge of organic waste, special attention is to be given to potential of the thermal treatment for producing the pellets considering the fact that all quantities of the produced pellets could be used further into the recycling technological processes as a green fuel. Due to the increasing attention to sustainable of agricultural and consumer demand for the use of natural over synthetic compounds, there is great interest in the utilization of grape by-products as food additives, nutraceuticals, ingredients of functional foods/dietary supplements, medical remedies, fertilizers, animal feed, antimicrobial components, cosmetics and finally as biomass for biofuels. Since currently the by-products of the Bovin winery are not being utilized, the winery is losing immense potential for additional income. The project will support Bovin winery find the most appropriate solutions to utilize the by-products of the wine production and introduce environmentally sustainable practices that will enable the production of wines with bio-certificates. Thus, it can influence not only better position of the Winery products and Bovin brand at national and international market, but could contribute to valorization of the by-products that are currently wasted.

Considering the background, scope, and significance of the project, **the main objective is to develop an efficient and sustainable business model for an organic waste management for Macedonian vineyards and wineries.** In order to achieve the project objective, the platform for the dialogue among all relevant stakeholders (i.e. municipalities, Ministry for Agriculture, Ministry of Environmental Protection, local farmers etc.) will be set up to discuss and improve the framework conditions for introducing circular economy in Macedonian wine production. Overall, the project encompasses the following **specific objectives** (i) set the preconditions for and recommend legal and strategic framework for organic waste management from wine production and to promote multilevel dialogue; (ii) to analyze organic waste generated from grape growing and wine production and identification of potentials for treatment; (iii) analysis of the current practices in organic waste management from wine production, (iv) development of sustainable organic waste treatment model; (v) to pilot and disseminate the developed business model for organic waste treatment in Bovin Winery, Negotino followed in at least by 10 other wineries; (vi) to raise awareness among practitioners via verification of the sustainability of the developed model. Considering the main and specific objectives of the project and the projected product outputs, **multi-expert approach** is necessary in order to set up framework conditions for promoting circular economy.

## IV. PURPOSE OF THE CONSULTANCY / EXPERTISE

### Objective of the Assignment

- **Developing analysis of organic waste generated from the wine production and potentials for treatment in Macedonian vineyards and wineries in Tikveš region, with focus on Bovin winery;**
- **Developing efficient and sustainable model for organic waste management from wine production in Bovin Winery, based on piloting one technology on site.**

Based on the current waste disposal situation in the Tikveš region, CRPM is looking for two or four individual experts or one team of experts to identify the technology options and requirements for organic waste management, propose business model(s) for sustainable organic waste management system, and execute pilot of the developed model on the grounds of the beneficiary company. The experience is expected to result with policy, regulatory and business recommendations that will be presented to relevant stakeholders, including state and municipality officials, relevant universities, and private sector representatives, for their consideration and adoption.

The experts need to assist the management of the beneficiary institution(s) Bovin and CRPM to develop an effective and sustainable business model for organic waste management in the Tikveš region and provide policy recommendations for enhanced policy and regulatory frameworks for circular economy in wine sector. One (among others) of the proposed business models can be partnership between the public institutions and the private sector for profitable utilization of the specific organic waste. The final goal is to have an appropriate and sustainable business model for cooperation with the private sector selected in a transparent way for providing professional rehabilitation service based on a profitable way and become self-sustainable in the next 3-5 years.

### Scope of Work- Agricultural/Environmental Expert

1. Research, analysis and report on current organic waste generation (quantity, types, and composition), including forecasts;
2. Assess organic waste generation during pilot (quantity, types, and composition) and including future forecasts;
3. Assess prospective utilization of different types of generated organic waste;
4. Recommend potential organic waste treatments based on review of at least 3 best practices in organic waste management and contribute to pilot of one;
5. Chemical and environmental analysis on potential organic waste treatments;
6. Chemical and environmental assessment of the chosen waste treatment within the pilot;
7. Presentation of pilot in Bovin to stakeholders.

### Scope of Economic/Technology expert

1. Situational and/or gap analysis on current waste management flow (including environmental, legal, procedural, infrastructure, administrative factors)
2. Options' Analysis on business models for organic waste management system (at least four scenarios/business models) including recommendations for environmental, legal, infrastructure, and administrative requirements for the proposed investment business models;
3. Cost Benefit Analysis of the developed business models including investment proposals;
4. Identification and proposal of technical options (technology to be used) and requirements for organic waste management business models;

5. Propose one business model for pilot and determine early primary results of the piloted business model, as well as propose monitoring framework;
6. Develop set of recommendations how to disseminate pilot to 10 other wineries.
7. Presentation of business models to stakeholders.

#### Scope of Joint work of Agricultural/Environmental and Economic/Technology expert

1. Baseline assessment (details provided in deliverables);
2. Execution of pilot of the selected organic waste management business model with required assessments (details in deliverables per expert);
3. Organization of meetings and training with local farmers, wineries, public companies, municipalities and other stakeholders (up to 40 small wine growers).

#### **V. OVERALL OUTPUTS AND DELIVERABLES**

1. Experts' Analysis;
2. Development of business model for sustainable waste management system in winery sector;
3. Piloting one business model for sustainable waste management system
4. Assessment and evaluation of pilot in Bovin Winery;
5. Dissemination of pilot in at least ten other wineries in the Tikveš region.

#### **VI. DETAILS ON EXPECTED OUTPUTS AND DELIVERABLES:**

<i><b>Deliverables</b></i>	<i><b>Estimated Duration to Complete</b></i>	<i><b>Tentative date</b></i>
<p><b>Background Analysis on generation of organic waste in the wine industry (primary and secondary data) in Tikveš Region: Demir Kapija, Kavadarci, and Negotino;</b></p> <ul style="list-style-type: none"> <li>- Gather data on wine producers, rate on wine production, vineyards, land use in the Tikveš region (regional and per city);</li> <li>- Assess current potential sources of generation of organic waste in the wine industry in the region. Supplemental information on other organic waste producers outside the winery industry in the region;</li> <li>- Review on the wine production process including the steps (what, how, when) of organic waste generation within the wine production process;</li> <li>- Analyze Organic Waste Quantity including Waste generation Index (regional and per city) and Data on organic waste composition at regional level and per city. The Analysis should be specific for each type of the organic waste produced during wine production process. Supplemental data should be supplied for estimations on additional sources of organic waste production outside the winery industry in the region;</li> <li>- Forecast future production of organic waste of wine producers on regional level and per city, as well as provide supplemental information on additional organic waste generation outside the wine industry in the region;</li> </ul> <p><b>Important consideration:</b> The research and gathering of data coincides with the start of first phase of pilot on the site (Bovin Winery): while</p>	<p><i><b>Agricultural/Environmental Expert</b></i></p> <p><b>Total of 15 working days</b></p>	<p><i>Latest by: 4 months from the contract start (by the end of March, 2023);</i></p>

<p>assessment of quantity and composition of specific organic waste is made at phase 1, specifically for grape stalks and other waste from this phase, the expert is expected to provide recommendation on which technology should be applied and tested.</p> <p>The first phase of the pilot should start late November and end mid-December. On site presence is required (at Bovin winery) together with the economic/technology expert.</p>		
<p><b>Analysis of prospective utilization of organic waste</b> (by type, category etc).</p> <p>For example, utilization of grape by-products as food additives, nutraceuticals, ingredients of functional foods/dietary supplements, medical remedies, fertilizers, animal feed, antimicrobial components, cosmetics, biomass for biofuels, heating pallets and etc;</p> <p><b>Analysis and recommendations on options for organic waste treatment</b></p> <ul style="list-style-type: none"> <li>- Provide analysis and recommend several options for treatment of the organic waste. Analysis and recommendations on possible treatments of organic waste may include but not limited to options for composting, biological treatment of organic waste by aerobic composting and anaerobic digestion (biogas production);</li> <li>- Provide chemical analysis of the waste to determine status quo and of the CO2 impact of the current waste treatment and the recommended options resulting with Environmental Assessment on proposed and selected organic waste treatments (conclusions on benefits from CO2 reduction potential of the recommended technologies).</li> </ul> <p><b>Important consideration:</b></p> <p>Overall, the output should focus on analytical assessment of utilization of organic waste produced in the wineries based on (a) organic waste composition, (b) quantity of organic waste, (c) local communities' willingness to cooperate on different organic waste treatments and their expectations on how they will benefit from organic waste treatments.</p>	<p><b>Agricultural/Environmental Expert</b></p> <p><b>Total of 15 working days</b></p>	<p>Latest by 10 months from the start of the contract (September, 2023)</p>

<p><b>Base Line Assessment</b>, the experts will produce:</p> <ul style="list-style-type: none"> <li>- <i>Situational Analysis of the waste management system, specifically for organic waste management in Tikveš region (Demir Kapija, Negotino, and Kavadarci);</i></li> <li>- <i>Description and assessment of the current conditions in waste management within the region;</i></li> <li>- <i>Report of economy-wide effects of “organic waste in green economy (consider legal regulations);</i></li> <li>- <i>Review on present practices on organic waste disposal in the wineries (interviews with wineries and local representatives to supply information and data);</i></li> <li>- <i>Identify landfills, dumpsites, small uncontrolled landfills or so called “dumpsites”;</i></li> <li>- <i>Map public or private entities responsible for waste collection, selection, and transportation; identification of installations and facilities for waste handling; and organizations registered for transforming waste into usable products resulting with identification of future potentials for the business model for organic waste management</i></li> <li>- <i>Review of at least three successful organic waste management models implemented in developed countries. The selected models for review should be of comparable criteria (feasible for local conditions).</i></li> </ul> <p><b><u>Important consideration:</u></b>  <i>This review should assist for the business model development phase. Based on the quantities and composition of waste, identification and information of local and regional companies that utilize organic waste map possible partners that would be ready to engage in piloting (i.e. receiving pre-treated wine yards’ waste from Bovin).</i></p>	<p><b>Joint expertise:</b> <i>Agriculture expert with Economic (technology, engineering) expert (5 days per expert)</i></p> <p><b>Total of 10 working days</b></p>	<p><i>Latest by 10 months from the start of the contract (September, 2023)</i></p>
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<ul style="list-style-type: none"> <li>- Provide analysis on possible technologies for organic waste treatment; options for organic waste collection considering the waste production process; technical options for selection, handling, transportation and transfer of organic waste (transfer vehicles or else); technical options for collection vehicles for organic waste, ex: Waste transfer stations</li> <li>- Based on the analysis propose appropriate technology to be purchased, rented or leased; propose utilization of available infrastructure and technical options for the organic waste treatment process available in the country and the region;</li> <li>- All of the above technical requirements to be included/estimated in the financial i.e. investment projections of the proposed organic waste management models.</li> <li>- Defining roadmap for selected technology and setting up monitoring scheme for economic viability of technology;</li> <li>- Development of Procurement documents (if needed) for technology application needed for piloting;</li> </ul>	<p><b>Total of 5 working days</b></p>	<p>Latest by 16 months from the start date (March, 2024)</p>
<ul style="list-style-type: none"> <li>- <b>Raising awareness and dissemination of results:</b></li> <li>- (approx. 50 wineries to be invited on the round tables).</li> <li>- Organization of meeting and training with local farmers, wineries, public companies, municipalities and other stakeholders (up to 40 small wine growers).</li> <li>- Organization of round tables to present business model with up to 10 wineries that could apply the technological solution on their own based on the Bovin pilot.</li> <li>- local stakeholder informed and discussed on selected technology. Roles and responsibilities defined. Agriculture/environment expert should participate in development of training material concerning modules on their part of the expertise.</li> <li>- Supporting involvement of the Faculty and students in implementation of selected technology (aprox. 10 students).</li> </ul>	<p><b>Joint expertise:</b> Agriculture expert with Economic (technology, engineering) expert (5 days per expert)</p> <p><b>Total of 10 working days</b></p>	<p>Latest by 18 months from the start (May, 2024)</p>
<p><b>FINAL REPORT DELIVERY</b></p>		<p>Latest by 24 months from the start (November, 2024)</p>

## VII. INSTITUTIONAL ARRANGEMENT

The experts will work under direct supervision by the Project Manager. He/she will be in regular communication with the Project Manager and the project team through e-mail, and will provide regular feedback. All communication and reports will need to be prepared in Macedonian language with English translation.

## VIII. DURATION OF THE WORK

The total time frame of the expertise required is estimated to be total of 80 working days which are to be allocated between experts based on the area of concern. As time frame



of 80 working days are overlapping between experts and/or multi expert team approach is encouraged, the total time period allocated for final project delivery is from November 15th, 2022 to July 15th, 2024.

## **IX. DUTY STATION AND TRAVEL**

The assignment will be local with travel arrangements to Tikveš region. Reimbursement of Travel costs (tickets, fuel, and tolls) need to be pre-approved and will be additionally reimbursed per CRPM standard fees and GIZ set rules and procedures. These travel costs are included and considered as part of expert's financial offer. The experts are required to submit a list of locations visited and adjacent travel documentation. Potential overnight stay will be reimbursed upon previous approval from the CRPM Project Manager at standard fee.

## **X. GENERAL EXPERIENCE AND TECHNICAL QUALIFICATIONS/COMPETENCIES FOR AGRICULTURAL/ENVIRONMENT AND ECONOMIC/TECHNOLOGY EXPERT**

- Relevant experience and track record of research (primary and secondary) in the waste sector with ability to successfully conduct relevant research and analysis;
- Strong knowledge of the local contexts in terms of challenges and opportunities in the waste sector;
- Knowledge in waste treatment models and social enterprises related to circular economy;
- Track record of research and analysis in designing waste management models (experience and track record in business modeling in agricultural sector is considered as an advantage);
- Ability to develop and formulate comprehensive documents related to provision of public services, development of public private partnership and conducting procedures for concession and public procurement;
- Good knowledge in development of sustainable institutional models and institutional capacity development;
- Proven record of ability to work in multidisciplinary teams;
- Ability to work and perform well under time pressures and considerable workload; Report and writing abilities; Ability and willingness to travel;
- Strong acumen for team work (proven ability to work in a team in a multidisciplinary projects);
- Advanced knowledge in English (written and oral).

## **XI. SPECIFIC QUALIFICATIONS OF THE AGRICULTURAL/ENVIRONMENT EXPERT**

The selected candidate shall possess:

- Advanced university degree in Agriculture, Enology, Viticulture, Civil Engineering, Environmental Engineering, and Environmental Sciences or related fields;
- Minimum 5 years of progressive research experience in agriculture, enology, and/or viticulture;
- Prior significant experience of research in waste management, waste treatments, waste recycling, wine industry-enology, environmental research, and impact evaluation;
- Knowledge, research, and experience in waste treatments (ex: thermal treatments, composting, biological treatment of organic waste by aerobic composting and anaerobic digestion (biogas production));

- Experience in identification of appropriate technology and its implementation methods in different waste treatment options; record of successful research of technology in agricultural and/or waste management;
- Comparative experience in research and analysis with demonstrated knowledge and experience in research methodology, analysis, and interpretation of results;
- Proven experience of successful collaboration with projects and programs funded by international organizations and donor countries;
- Strong acumen for team work (proven ability to work in a team in a multidisciplinary projects);
- Advanced knowledge in English (written and oral);
- Prior experience of working in multidisciplinary teams will be considered as an advantage.

## **XII. SPECIFIC QUALIFICATIONS OF THE ECONOMICS/TECHNOLOGY EXPERT**

The selected candidate shall possess:

- University degree in economy, technical sciences, engineering, business management or a related field, or combination of related fields;
- Minimum 7 years of progressive experience in development of procedures related to public private partnership, concession, and public procurement;
- Familiarity and knowledge of the legal environment (legal regulations) concerning waste;
- Significant experience in conducting business analysis, construction and development of business models, cost benefit analysis, economic forecasts (business modeling in agri-business and/or food processing sector will be considered as an advantage);
- Proven record of past performed research on economic viability of technology (record of successful research of technology in agricultural and/or waste management will be considered as an advantage);
- Comparative experience in research and analysis with demonstrated knowledge and experience in research methodology, analysis, and interpretation of results;  
Proven experience of successful collaboration with projects and programs funded by international organizations and donor countries;
- Strong acumen for team work (proven ability to work in a team in a multidisciplinary projects);
- Advanced knowledge in English (written and oral);
- Prior experience of working in multidisciplinary teams will be considered as an advantage.

## **XIII. DOCUMENTS TO BE SUBMITTED**

Interested offerors are invited to submit the following documents/information for review and consideration:

- a. Provide a proposal including detailed response to the TOR-Proposed methodology of the action Plan - Proposed timelines;
- b. Most updated CV with focus on required qualification as well as the contact details of at least five (5) professional references;
- c. Examples of previous work (research and/or projects executed in waste, (preferable past research on organic waste));
- d. Financial Proposal. The financial proposal must be expressed in the form of a lump sum all-inclusive cost, supported by breakdown of costs (daily fee rates, detailed expenses etc.)

Failing to submit any of these documents may result in disqualification of the application.

#### **XI. CRITERIA FOR SELECTION OF BEST OFFER**

The award of the contract shall be made to the offeror whose offer has been evaluated and determined as:

- a) Being responsive/compliant
- b) Having received the highest score based on the following weight of technical and financial criteria for solicitation as per the schedule below:
  - Technical criteria weight: 70%
  - Financial criteria weight: 30%

#### **XII. THE CONSULTANTS/EXPERTS APPLICATION REQUIREMENTS:**

- The Consultants/Experts could either be a joint experts' team, consulting firm or a joint cooperation of companies that have extensive and demonstrated experience and expertise in the field of research and development in agriculture, civil engineering, environmental engineering, waste, waste management systems, progressive experience in development of procedures related to public private partnership, concession, and public procurement, experience in conducting business analysis, construction and development of business models, cost benefit analysis, economic forecasts, business modeling in agri-business and/or food processing sector;
- The Consultant/company must be able to provide a team of local experts qualified to perform the tasks detailed in the outputs of the assignment as per the minimum individual qualification requirements specified for each expert (agriculture and economic/technology).