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The Urban Lab of Europe !

The A2UFood project Journal N° 4

Project led by the City of Heraklion



**CIRCULAR
ECONOMY**



The A2UFood project

A2UFood aims to establish a holistic and coordinated management scheme to address food waste in the hospitality sector (hotels and restaurants) in the municipality of Heraklion. It wants to reduce avoidable food waste and use unavoidable food waste as raw materials through a broad range of innovative integrated tools and activities. For example project partners will develop a software to improve households' food management, making use of data stemming from supermarket loyalty cards. A second opportunity restaurant will use leftover food from the hospitality sector (collected through a pilot source separation scheme) to prepare meals for those in need. The project will also set up a pilot bio-plastic bio-refinery production system to produce compostable bags. A range of state-of-the-art autonomous composting units, using the aforementioned compostable bags, will be installed to maximize food waste valorization in the municipality. Citizens and local companies will be informed and engaged through a city-wide information campaign to ensure their large participation.

Partnership:

- City of Heraklion
- United Association of Solid Waste Management in Crete
- ENVIROPLAN S.A
- University of Crete
- Technological Educational Institute of Crete
- Harokopio University
- University of Stuttgart

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1. EXECUTIVE SUMMARY

Food waste is a significant problem our world is facing today, with worrisome environmental, social and economic consequences. One third of all food produced for human consumption is wasted, contributing 8% of the anthropogenic Greenhouse Gas emissions (FAO, 2011). In the

meantime, 821 million people worldwide are hungry and 10.9% of the world population undernourished. Limiting food waste is an imperative in contemporary societies. Eliminating it is the ultimate goal in circular economy.



Valuable food should not end into food waste

The A2UFood project aspires to design and implement a holistic food system involving food waste prevention, optimal use and composting with the aim to divert food waste from the waste stream and to feed the circular economy (and society) of the city. It adopts a holistic approach, addressing both environmental and social concerns.

The original plan foresaw that the first year would be dedicated to licensing, tendering, preparation actions for food waste prevention and for communication activities. In addition, the RESOURCEMANAGER-FOOD (RMF) tool for hospitality units to document and limit their food waste generation, would be adjusted and would be used in six hotels. In the second year, it was expected that after the renovation and/or construction of the second opportunity restaurant and the bioplastics facility, their

operation would begin. The digital tool for food waste prevention would be ready for use. Furthermore, the different composting units would have been installed and in operation in this same period.

The real-life implementation agrees with the technical provisions of the original plan but lags behind the foreseen schedule. The first year focused on the preparatory activities for all the technical actions – i.e. selection of proper locations, design and tendering documents for food waste prevention, optimal use of avoidable and unavoidable food waste and urban composting. These activities continued and remain central in the second year, and in this last six-month period. Communication activities are being implemented throughout, with the website, social media and some awareness raising leaflets having been established in previous periods.

In this fourth act, despite the original scenario and rather than the demonstration of the innovative circular economy and social solidarity initiatives of the project, the primary focus has been the resolution of licensing and tendering challenges and the design of the infrastructural activities that relate with the optimal use of avoidable and unavoidable food waste and composting. The stage is still not ready for their operation, with the possible exception of home composting. The enhancement of awareness raising tools for food waste prevention was another main axis of activity in this period. Albeit the team's persistent, coordinated and promising efforts to overcome obstacles in the preparations for the main infrastructural actions, longer delays ensued and now the feasibility of the actual operation of the bioplastics unit and of the 2nd Opportunity Restaurant within the project duration is at best very minimal. The partners have mobilised their creativity and are considering all possible courses of action.

The project team has worked well together in this period and has progressed the studies

and documents that are needed for the infrastructural works. However, bureaucratic and spatial constraints have taken a toll on the project's implementation (i.e. insufficient open spaces, illegal urban development, few and old buildings available). Although light can now be seen at the end of the tunnel, time is running out. Our actors are called to continue their efforts to conclude these licensing and tendering procedures with extreme urgency, mobilising the needed and timely support from all involved public authorities and services. They are also called – which they have already started doing – to creatively think of alternative approaches for the foreseen actions (e.g. construction, time organization) in order to ensure some time for the demonstration phase. Furthermore, they should also ensure to continue excellent internal coordination as the team should work to mobilise interest and support from the general public at the same time that it constructs, installs and operates the foreseen facilities and equipment in a very tight time frame.

2. INTRODUCTION

“...This is how we will present the A2UFood project – as a play; a play with a series of acts, and a play of which no one – including the actors – knows the end before experiencing the whole play.”

(Marouli, Journal 1, October 2018)

The A2UFood play continues amidst a very challenging reality; a reality that includes anticipated risks but also unprecedented conditions. This time, the setting in which my real- life encounter with the actors of the A2UFood was organized underlines the appropriateness of Goffman’s (1959) insights.

Life is a theater in which people interpret and act upon events within the parameters of the life stage. Life is unpredictable; challenges cannot be foreseen or safely averted; we are all – humans and our environment – so interconnected, affecting each other’s efforts and wellbeing; and interpretation underlines all our actions, the impacts and the social practices. The meeting took place amidst serious concern about the coronavirus epidemic the significance of which was only then starting to reveal itself. We talked about the first coronavirus protection measures that had already been announced in Greece both at the beginning and the end of the meeting.



Project meeting

The players – project partners have to once again prove their commitment to the project goals, their perseverance and their ability to think creatively for effective problem solving.

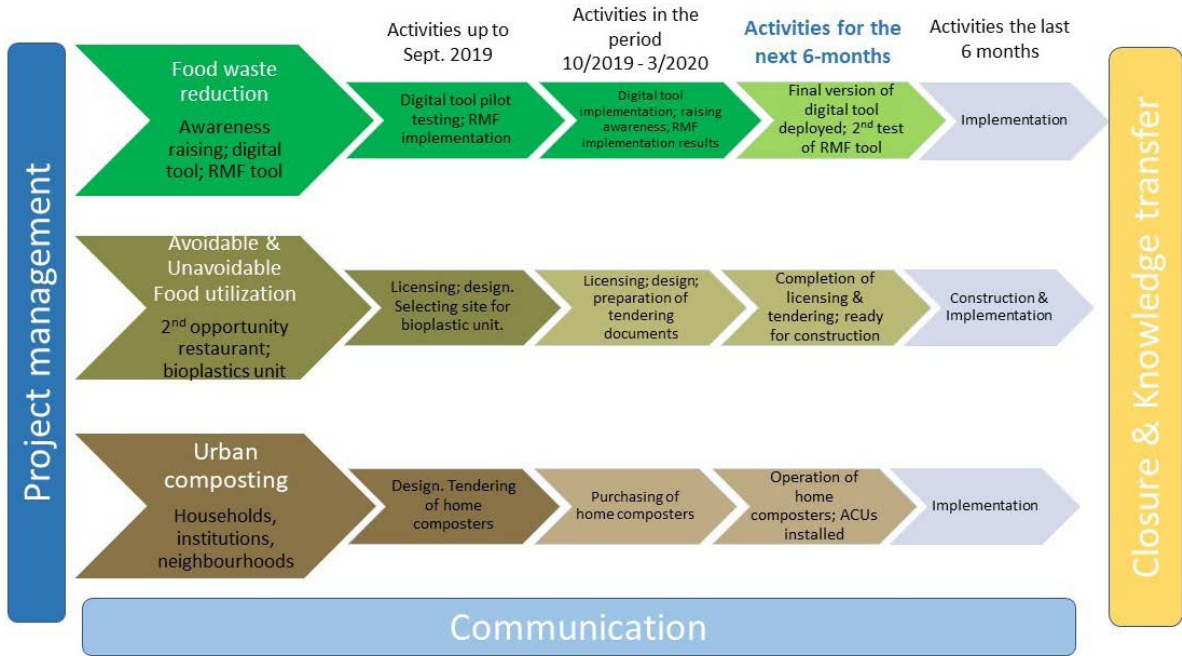
This journal is an account of this 4th act and aims to share the project's progress, achievements, challenges and obstacles of this period, as well as to discuss risks that remain and to identify useful lessons for other innovative initiatives aiming at sustainable societies based on a circular economy logic.

3. ACT 4: PROMISING EFFORTS – EXTREMELY TIGHT TIME FRAME

3.1 Act 4: Overcoming obstacles and urgency

In this act, the A2UFood team worked diligently to complete studies and acquire licenses, to prepare tendering documents and organise public procurement exercises, to update the digital tool for food waste prevention, to complete laboratory

experiments, and to prepare communication documents. But they faced more difficulties. Food waste prevention activities progressed well in this period, but food waste utilisation actions experience insurmountable delays.



Project work flow – As foreseen for the next months

3.1.1 Food waste prevention – preparations in place

For the challenging aim of food waste prevention, the A2UFood team has planned to use both an information campaign and a couple of digital tools, one for supermarket customers and another one – the RESOURCEMANAGER-FOOD (RMF) tool – for hospitality units. For this period, it was foreseen that the second (alpha) version of

the Digital Food Waste Prevention tool would be available, the results of the first pilot implementation of the RMF tool would be communicated to the hoteliers, and information campaign activities would continue.

3.1.1.1 Digital tools for food waste prevention

In this act, a pre-final (alpha) version of the digital tool for food waste reduction was expected and

was actually produced. During the piloting phase of the beta version of the digital tool, which was concluded in December 2019, the volunteers that were testing it provided feedback to the HMU software designers who then enhanced the tool accordingly. The alpha version of the application includes estimated expiration dates and although notifications for expiring food stuffs are not sent out yet, the user can see a list of food stuffs s/he has purchased and have surpassed or are close to their expiration date (if they were not already consumed). The user can update this list (e.g. erasing consumed food) and use it for planning his/her food use. S/he can also choose some food stuffs and ask for suggested recipes.

This alpha version has now been released on Google play store and is accessible after invitation. The designers wish to further fine-tune the digital food waste reduction tool, include notifications and produce a manual in the next months, in parallel with the testing of the alpha version. The supermarket chain (i.e. Chalkiadakis) in Crete in which the digital tool will be deployed, is ready to use it in connection to its consumer card. The final version of the digital tool is expected in May 2020, when the application will also be made available on the Apple store.



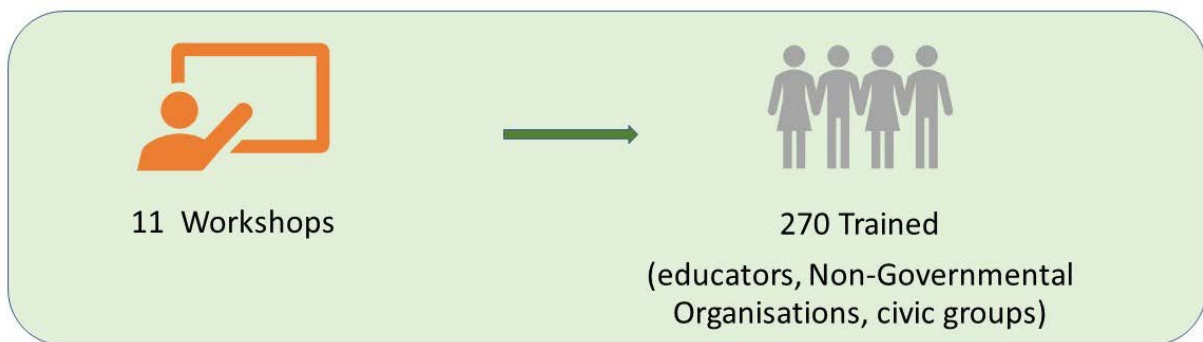
Exchanging experiences on the use of the Digital tool for food waste prevention

The representatives of the hotels that tried the RESOURCEMANAGER-FOOD (RMF) tool in 2019 were positive about the experience and made some suggestions for its implementation as discussed in the second Zoom-in of the A2UFood project. The USTUTT team shared the quantitative results of the first RMF tool trial along with suggested measures with each one of the five participating hotels, who expressed their interest in a comparative approach as well. A second round of trials with the RMF tool, designed to lead to more directly comparable results, is being planned for the 2020 tourist season. This plan

may need to be revisited in light of the coronavirus pandemic the whole world is presently facing.

3.1.1.2 The awareness raising campaign

In the context of the Information Campaign Plan, the partners have organised 11 workshops, 4 in this period, for environmental educators, people from Non-Governmental Organisations and civic groups. The educational and communication materials that have been produced in the context of the project were disseminated in the workshops and other dissemination activities, either organised or attended by the partners.



The e-book is available on the website (available at: <https://foodsaveshare.gr/wp-content/uploads/2019/06/e-book.pdf>) for use by anyone interested. Social media continue to be used for awareness raising purposes, but the beneficiaries are considering their further enhancement.

Communication activities become even more important as the time approaches for the initiation of the demonstration phase and the installation of the home composters and the Autonomous Composting Units (ACUs).



Electronic book and leaflet on food waste prevention

3.1.2 Avoidable and unavoidable food waste utilisation

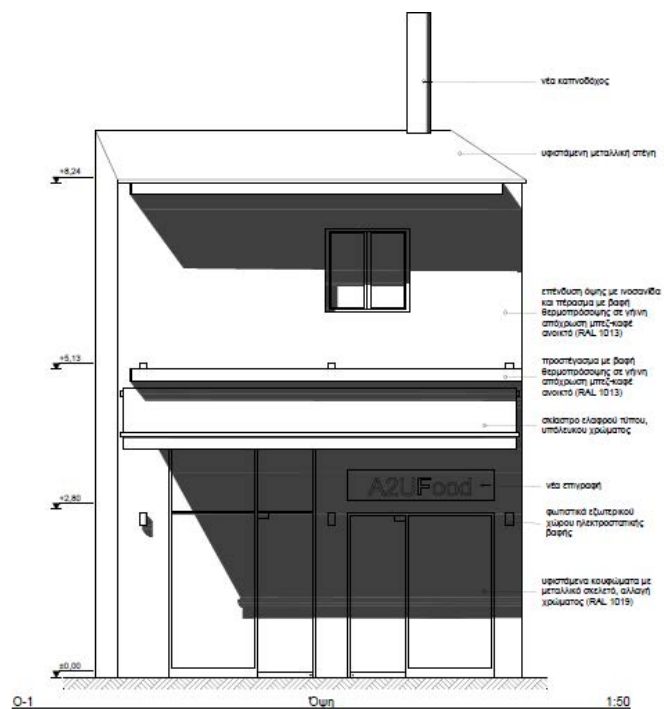
Aside of food waste reduction, the partners have planned three activities for the utilisation of avoidable and unavoidable food waste: the establishment of a 2nd opportunity restaurant for the unused good quality food, a bio-plastics production facility for the unavoidable food waste, and the design of a source separation collection scheme.

According to the revised schedule that was proposed in the previous period, the construction of the **Second Opportunity Restaurant**, the tendering procedures for the bioplastics unit and the ACUs should be ongoing, while the collection scheme and optimum routing should have been completed and the home composters installed. But what actually happened?

In this period, our actors continued their efforts to complete licensing and tendering procedures. However, the structural study of the selected building revealed significant reinforcement

needs, which led to a revision of the proposed designs to fit the structural needs and the budget constraints and additional delays. ENVIROPLAN limited the area of the attic and the available sitting space, as well as the equipment to be used. The restaurant will be able to serve 51 servings/day, while it can prepare an unlimited number of servings to be distributed and consumed elsewhere. Changes were also proposed at the façade of the building. As a consequence of the new requirements, ENVIROPLAN also prepared a structural reinforcement study. All changes were submitted for approval by the Archaeological Service and they were approved in early March 2020. Furthermore, ENVIROPLAN prepared and submitted a new application for the building permit.

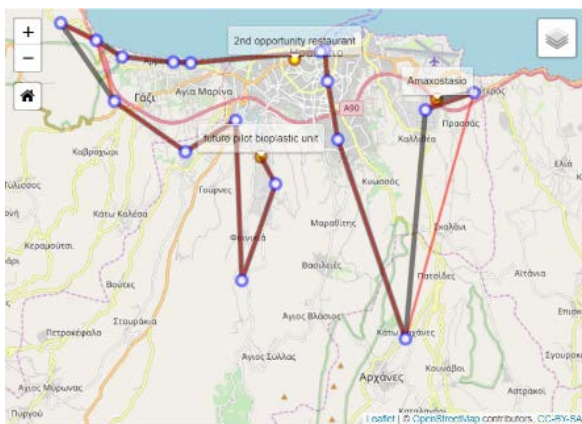
The partners expect to have all needed permits by mid-March 2020. Given the remaining actions (i.e. tendering and construction), the 2nd Opportunity Restaurant should be operational in February 2021.



The building façade design as approved by the Archaeological Service

The **food waste collection and routing scheme** has been finalised. HUA used GIS technology to determine the optimum route and time required for collection, while they developed a dynamic online application for routing optimisation in the context of the specificities of the project (e.g. the providers and the city layout).

The tendering for the two trucks that will do the collection of avoidable and unavoidable food waste is expected to be published in late April 2020.



Optimum routing

In this act, the main work for the **bioplastics production unit** included design, studies and tendering. The programmatic agreement between ESDAK and the Municipal Enterprise for Water and Sanitation at Heraklion was signed and UOC completed the laboratory experiments. ENVIROPLAN submitted a first version of the design and tendering documents for the bioplastics unit, both of which are presently being revised according to ESDAK's comments. Both of them were expected to be ready by mid-March 2020, with an approximate 7-month delay, assuming that the Municipal Enterprise for Water and Sanitation at Heraklion will provide some needed missing information. However, even this date is not possible with the recent confinement measures that have been imposed due to the

coronavirus pandemic. In the same period, ENVIROPLAN also prepared the Environmental Impact Assessment (EIA) and revised it after comments from ESDAK. The revised EIA was submitted for approval to the Department of Environment and Spatial Planning of the Decentralized Administration of Crete, which is expected to take approximately 2-3 months.

The design of the **bioplastics production facility** proved challenging due to the characteristics of the site – i.e. old soil deposits and proximity to a river – as well as lack of easily accessible data needed for the structural designs and budget constraints, leading to further delays in this act. Thus, the hope for 5-month long operation of the unit is impossible. The only type of operation that may be feasible under the present conditions is a short demonstration to prove that this process can produce good quality bioplastic from food waste and only if the time frame of the project can be adjusted.

3.1.3 Urban composting

The third storyline that unfolds in the A2UFood project relates to home and neighborhood composting. The team has foreseen that 100 home composters, 6 neighborhood Automatic Composting Units (ACUs) and 2 large ACUs in 2 big institutions will be installed. In this act, the tendering and purchase of the different composting units and the relevant monitoring equipment were expected to be finalised and the composters to be in operation by February 2020.

In this period, the purchased 100 home composters were delivered to the Municipality. MoH reconsidered the originally selected sites for the installation of the Autonomous Composting Units (ACUs) in neighborhoods with a main criterion being the availability of electricity in the selected parks since ACUs require a power

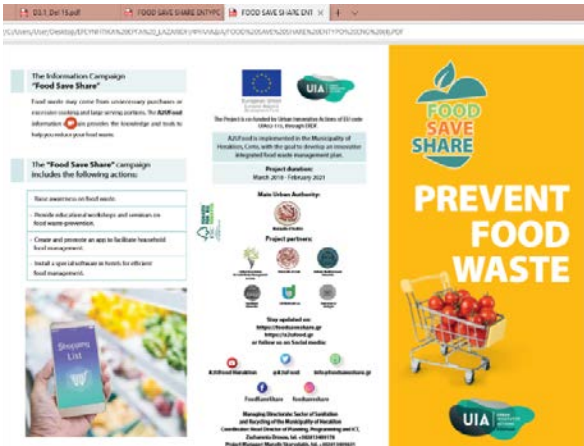
supply. The tender for the 6 ACUs that will be installed at the selected neighborhoods and the 2 ACUs that will be installed in 2 institutions was published in late February 2020. The home composters are going to be installed in the participating households in late March 2020, at the same time that the Municipality will undertake an awareness raising campaign with the support of the informative material that has been generated in the context of this project. Partners expect that ACUs will be delivered in August and installed in September 2020, with a 7-month delay in comparison to the original plan.

3.1.4 Communication

In this period too, partners continue uploading news and other informative material on the project’s social media & website. The team also published two more leaflets – one on source separation and a second one on composting units, while it was organizing a conference on food waste.

The partners understand the significance of communication actions and they are thinking of

ways to further disseminate produced communication materials. For this reason, the three leaflets that have been produced so far are useful not only in the context of the A2UFood effort, but also for other municipalities. The beneficiaries are considering preparing template leaflets with only the UIA logo (i.e. without the partners’ logos) and an empty space where the municipality that will adopt the material can use its own logo. Furthermore, they had organised a conference on Food waste (Retaste) in April 2020, but it has been postponed until the fall due to the coronavirus pandemic.



Project leaflets

3.2 Challenges faced: The road continues uphill

In this act, although it was hoped that most of the actions would have been well-under way, still challenges prevailed and our actors needed to contend with obstacles and delays. The main challenges that the team faced related with

different steps of the licensing processes for the Second Opportunity Restaurant and the bioplastics production unit (e.g. revision of documents, submission and approval).

LICENSING	<p>a. As feared in the previous act, given the age of the building for the Second opportunity restaurant (built in the late 19th century), it proved structurally unsafe to house the proposed activity without additional reinforcements. As a consequence, additional studies were needed, and amendments had to be made in already prepared designs in order to ensure users' safety. This resulted in serious delays in the licensing process, which are of course carried over to the construction of both infrastructures (yet to start).</p> <p>b. Further complications arose also in the design of the bioplastics production unit due to the challenging ground quality of the site (i.e. partly filled with old deposits, proximity to a river), which also resulted to additional cost considerations. Designs and tendering documents were revised and expected to be finalised in mid-March 2020.</p> <p>The ensuing delays in the completion of the required documents for the submission for approval render the operation of both the Second Opportunity Restaurant and the bioplastics unit within the project's lifetime an impossible dream, unless the project duration can be adjusted and/or other innovative solutions are identified.</p>
PROCUREMENT	<p>The tendering of the ACUs took some time before its publication. This delay is mainly attributed to intricacies in the procurement requirements and procedures, and partly to the coordination between different municipal departments. However, this difficulty was overcome and the tendering procedure for the ACUs was published in February 2020, leading to an estimated 1-month further delay in the installation of the ACUs.</p>

4. LESSONS LEARNT AND FUTURE CHALLENGES

Out of the three main story-lines of this project, it appears that food waste reduction and urban composting have the potential of being satisfactorily implemented, but the operation of the 2nd Opportunity Restaurant and the bioplastics unit has become unrealistic within the duration of the project without a readjustment of the project's time frame and/or other innovative approaches are adopted.

Several challenges lie ahead still and they are expected to be aggravated by the unprecedented ones we are experiencing these days. The coronavirus pandemic, which has hit the whole world, Greece included, has changed the "life stage" with consequences in all aspects of life, some of which we can get a glimpse of today (e.g. economy, Information Technology) and others that we cannot imagine. Maybe, it will alert us to the reality of our inextricable interconnectedness and our "smallness" in the context of this world. Surely, it will affect the implementation of this project in practical ways as well. Some of the actions that are already being affected are: the second round of the RMF tool implementation at hotels as hotels are closed for April and probably May; and the procurement processes since the relevant municipal department operates in limited capacity. The project team's cohesiveness, creativity, perseverance and flexibility will be needed more than ever. Some of the practical problems may need to be addressed in collaboration with the UIA Secretariat. The European Union is in the midst of the crisis and is adjusting its policies and practices to address the challenges; we will see what that will mean for UIA projects.

Key lessons learnt:

- Life is unpredictable. Change is continuous and at times abrupt. Planning should be forward-looking, with proper milestones, and humbly understanding its own limitations (i.e. we cannot control the future). Ample time should be foreseen in a project to allow addressing unforeseen circumstances.
- When challenges arise in the midst of the implementation, flexibility, creativity and adaptability – by thinking individuals and learning organisations – are required.
- Everything – everyone is interconnected in life (e.g. human societies and nature; different municipal departments; municipal initiatives and people's behaviours). The organic coordination of them towards a common goal takes time. Thus, getting familiar with the context of the project (who is involved; relations; processes etc.) should be a prioritised first step in the project implementation, with a sufficient time frame.
- This same interconnectedness – which renders such innovative initiatives that aim to change present practices complex – requires the effective collaboration and coordination of all the different departments and bodies of state bureaucracies. Establishing and regularly operating a Working Group involving all of them and facilitating their communication is a good practice.

Challenge	Level	Observations
Leadership	Medium	<p>The Municipality’s leadership – especially at these turbulent times – has two important roles to play:</p> <ul style="list-style-type: none"> - to carry the project through the tribulations it is expected to face (especially in relation to licensing, tendering and construction) efficiently (especially as there is no time slack) and effectively. Its support and clear guidance are required in order to mobilise different public services and municipal departments in a coordinated fashion towards the same goal – the successful completion of project actions. - To commit to the project (political will) and to take actions for ensuring (i.e. resources) the continuity and maintenance of the project after its end date. <p>This Municipal leadership appears capable and willing to support the project. It should now start to think of its future too.</p>
Public procurement & licensing	High	<p>Licensing continues to pose serious risks for the project. Even if everything in the preparation of the required documents works as planned, objections to procurement decisions may arise which may cause even further delays in the project. Please see section 3.2.</p>
Integrated cross-departmental working	Medium	<p>The Project Working Group, which has been established and involves representatives of several implicated Municipal departments, will surely help the collaboration and coordination of the different departments for the efficient implementation of future actions and avoidance of additional delays in licensing and tendering. This is necessary as the time schedule is now extremely tight. Nevertheless, the political will of the Municipal leadership is important for effective coordination and efficient execution of tasks as well. Thus, the project group should work closely with the Municipality’s leadership, keeping them informed and involved throughout.</p>
Monitoring & evaluation	Low	<p>Monitoring and evaluation should be a regular priority in the coming months in order to quickly identify possible hitches and obstacles early on and address them before they translate to problems and further delays.</p> <p>The project team has the capacity to monitor and evaluate the project impact; it has also developed some tools (e.g. excel sheets), including indicators, for monitoring the project implementation.</p>
Financial stability	High	<p>At this stage, this is a concern for the maintenance of project activities after the project end date. This is an issue that the A2UFood team has postponed due to the serious challenges in the implementation of main project actions, but it needs to start planning now (not later), thinking and pursuing the feasible and most beneficial methods for supporting their operation with the needed resources (funds and personnel) after the project completion.</p>

Challenge	Level	Observations
Communicating with target beneficiaries	Low	Communicating with the wider public that is called to participate in food waste reduction and urban composting is an important activity for the next months of the project implementation. Communication should be well-designed, systematic and well-grounded in everyday life and people’s concerns. An additional challenge is that this needs to be done at the same time that technical actions and challenges are addressed, in a rather tight timetable. Please see chapter 3.1.4.
Upscaling	High	Upscaling does not arise as an issue at this point given the significant delays in the licensing procedures. However, the continuation of the project after its end date will require resources and political will, and ideally connection with the market. Political will and mobilization are considered fundamental for this; thus, this issue has been discussed under “leadership” above.

5. WHAT NEXT?

This is a particularly crucial period for the A2UFood project. However, in the midst of the unprecedented challenges and new life conditions we face today with the coronavirus pandemic, the feasibility of the plans of the project team and the abovementioned anticipated dates for all project activities is questionable.

In the next period, the final version of the Digital Food Waste Prevention tool and the second round of piloting the RMF tool at selected hotels in Heraklion are expected. Will the A2UFood team manage to implement them given the constraints of the coronavirus period? And if they do, how effective can they be?

The licensing and the tendering for the construction of the 2nd Opportunity Restaurant and of the bioplastics unit should have been completed by the end of this next period and

construction should be starting. The tendering of the two food waste collection trucks and other equipment or related services, should have been completed too. Home composters should be in operation for several months, while ACUs should be installed ready for operation. Will the project team manage to avoid further delays? Will they be able to avert coronavirus from “infecting” and slowing down licensing and tendering procedures too? Will the A2UFood team manage to apply innovative ways of reorganizing practices and the project timeframe to allow for some, even if only minimal, operation of the 2nd Opportunity Restaurant and of the bioplastics unit? The next few months are crucial.

We will keep on looking at the A2UFood collective effort, as well as other innovative efforts like it (e.g. other UIA efforts), as this is where hope lies.

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UIA projects will produce a wealth of knowledge stemming from the implementation of the innovative solutions for sustainable urban development that are of interest for city practitioners and stakeholders across the EU. This journal is a paper written by a UIA Expert that captures and disseminates the lessons learnt from the project implementation and the good practices identified. The journals will be structured around the main challenges of implementation identified and faced at local level by UIA projects. They will be published on a regular basis on the UIA website.



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