



Standards Setting for operators/maintenance of green areas





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Index:

1. Introduction
 - a. Project description
 - b. Project partners involved in the activity and project territories
 - c. Aims and goals of the document
2. Methodology
 - a. Surveys and data collection
 - b. Data analysis
3. Results
4. Conclusions and next steps

1. Introduction

a. Project description

The Viridis Loci (VL) project aims to provide specialised VET training/transfer of skills in the correct management of green areas and parks in municipalities to public technicians and private subjects who are interested in dealing with an advanced professional management of urban nature in three European islands: Sardinia, the Balearic Islands and Madeira. The Czech Republic will contribute to the development of the project as one European country where 'the culture of well managed green areas in cities as providers of ecosystem and social services for the whole community' is deeply rooted, considering the role and the presence of Czech's partner too.

The project partners come from four European countries, Italy, Spain, Portugal and the Czech Republic. The Italian partners are: ANCI Sardegna (project leader), Fito-consult and ATM Consulting; the Spanish partner is FELIB (Federation of municipalities of the Balearic Islands); the Portuguese partner is AREAM (Regional Agency of Energy and Environment of the Autonomous Region of Madeira). The Czech partner is ABA International (a 'non profit' international education association and certification body).

The consortium presented this project for three main reasons:

- 1) Environmental sustainability and the fight against climate change: it emphasises the role of well-managed green areas/parks within cities and municipalities in general as providers of ecosystem services (benefits that people obtain from nature, e.g.,, climate regulation, CO2 capture, air quality improvement, cultural values, public health and biodiversity conservation).
- 2) Increase Inclusion. The project will operate in three island contexts in southern Europe, which due to their geography, tend to be isolated and at a permanent economic disadvantage compared to other regions of the continent
- 3) Overcoming the knowledge gap with the use of ICT technologies to impart a highly technological and innovative working methodology.



The project will operate in three island contexts in southern Europe, which due to their geography, tend to be isolated and at a permanent economic disadvantage compared to other regions of the continent. Islands tend to lag behind in economic terms and innovation processes negatively impact the communities residing on the islands. Unemployment rates in the three islands are high with dramatic peaks among young people and in all cases higher than the respective national averages: Sardinia (18% - youth unemployment around 45%), Balearic Islands (youth unemployment 17% - around 40%) and Madeira (10% - 50.5% youth unemployment).

b. Project partners involved in the activity and project territories

ANCI Sardegna (IT) is a voluntary and independent association which represents almost all Sardinian municipalities (374). It aims to represent Sardinian municipalities and their interests towards other local administrations at Regional level. It promotes the cooperation between Italian municipalities and it conceives initiatives aimed at their economic and social development. It is the fundamental organisation of the National Association of Italian Municipalities, in accordance with the provisions of the National Statute, operates in conformity with it. It represents the views and concerns of Sardinia Municipalities at Regional and National meetings between central and local institutions. To achieve its institutional goals, ANCI Sardegna:

- represents the interests and protects the rights of the members before the Regional administration and the peripheral organs of the State;
- promotes the study of problems that affect the associates; it intervenes with its own representatives in every forum where the interests of local autonomies are discussed or administered; promotes training courses for the benefit of administrators and employees of local authorities;
- establishes a committee of experts in the various disciplines, coordinated by the Secretary of the Association, providing assistance and advice to the associated bodies.
- promotes and encourages initiatives to spread knowledge of local institutions, civic education of citizens and to encourage their participation in the life of local autonomies;
- promotes the participation of associated bodies in forms of collaboration and coordination; • studies and promotes initiatives aimed at favouring the economic and social development of communities;
- maintains operational links with state bodies, with the Regional Administration of Sardinia, with the Provinces, with other regional associations and with the organisations of local autonomies operating in Sardinia;
- works for a decentralisation of public interest functions at every level;

- participates in the activities and initiatives of the national ANCI, representing the will and requests of the member bodies;
- promotes initiatives aimed at resolving disputes that may arise between private entities, between businesses, between businesses and consumers, between local authorities and private entities in the management of their functions, from public works to supplies, and local public services.

Sardinia

Location: Mediterranean Sea

Area: 24,090 km²

Population: 1,628,384

Number of municipalities: 377

Climate: Mediterranean and Temperate

FELIB - FEDERACIO D'ENTITATS LOCALS DE LES ILLES BALEARS (ES) is the Federation of Local Municipalities of the Balearic Islands. Its main goals are: • Defend and promote the common interests of the associated entities that comprise it (all the town councils of the Balearic Islands + the Insular Councils of Mallorca, Menorca, Ibiza and Formentera), and also promote and defend their autonomy.

- Promote and defend the Catalan language and the culture of the Balearic Islands in social life.
- Promote studies on issues that affect associated entities.
- Disseminate the knowledge of the local entities of the Balearic Islands.

For this, the FELIB has a training department that constantly organises courses for the training of public employees of the municipalities and island councils. It also has a legal department that supports all the municipalities that require its help, resolves the queries that are made, makes reports on the new regulations that affect the municipalities, etc ... In

addition, within the FELIB a contracting center was set up to carry out large tenders for products and services that all associates demand, such as electricity, vehicles, electric vehicle charging points, etc ... The most important decisions of the FELIB are taken in assembly, although for ordinary management there is an executive committee made up of 31 municipalities. There is a president, three vice-presidents and a general secretary, who is in charge of the daily management of the federation's affairs. The FELIB is integrated into the structure of the FEMP (Spanish Federation of Municipalities and Provinces)

Balearic Islands

Location: Mediterranean Sea

Area: 4,992 km²

Population: 1,215,174

Number of municipalities: 67

Climate: Mediterranean climate

AREAM - AGENCIA REGIONAL DA ENERGIA E AMBIENTE DA REGIAO AUTONOMA DA MADEIRA (PT) is a private non-profit making association, recognised as a public utility, situated in Autonomous Region of Madeira, Portugal. The main purposes of AREAM are the promotion of sustainable energy, sustainable use of water, climate change mitigation and adaptation, sustainable mobility, protection of the environment and biodiversity conservation, namely by supporting local and regional authorities, energy suppliers and end-users. AREAM develops local and regional policy planning and research, demonstration and innovation projects in these areas in cooperation with other regions, islands and outermost regions. In the scope of their areas of intervention, AREAM also provides technical support in the elaboration and implementation of regional policies and develops awareness raising campaigns directed to general public, education community, local and regional authorities and economic actors, to promote sustainable procedures and technologies and to promote the adoption of sustainable behaviours

Madeira Archipelago

Location: Atlantic Ocean

Area: 801 km²

Population: 250,769

Number of municipalities: 11

Climate: Subtropical

ABA International, z.s. (CZ) is a non-profit education association and skills accreditation 'umbrella body' was developed with a clear vision to help reduce accidents & fatalities to skilled workers & members of the public and promote quality professional certification schemes within Europe and worldwide i.e. National Certification, International Recognition. ABA's mission is to enhance safety standards through continuous improvement (including the safe use of technological developments) and supporting the recognition of certification. It is self funded & sustainable. ABA has provided a framework, supported, promoted, further enhanced skills qualification products particularly qualifications, within the tree care sector since 2012 & has a proven track record. Its membership includes broad representation from education organisations, research organisations, industry bodies etc which includes specialists in the fields of urban tree care, inspection & management for safety and the application of modern technology such as unmanned aerial vehicles or drones. ABA develops & regulates approved qualification centres delivering European & international qualifications across currently 4 continents & over 20 countries. All European qualifications are referenced & weighted to the relevant EQF credit rating with clear learning outcomes. The qualifications have been evaluated & recognized by health & safety authorities in the UK, Ireland, Denmark & Sweden for example. Insurance organisations such as Trust Insurance & the national Farmers Union in the UK have endorsed them and they have been aligned with the Qualifications Framework in countries like Hong Kong. Qualifications are promoted & delivered by as stand-alone skills qualifications or integrated by other members into student programmes such as the Professional Diploma in Arboriculture which includes

tree safety inspections. As well as Universities, Higher school & college members of ABA integrate them within their own provision at further/vocational level therefore the qualifications 'effectively bridge' the VET sector from work-based through to higher education supporting recognition & mobility of award holders. Occupational standards are based on learning outcomes managed by Expert Groups primarily representing VET & industry. Industry manufacturers such as Predator have also independently endorsed and supported ABA accredited qualifications. Quality assurance processes are audited & maintained via a Regulatory Board. ABA is another key partner in ensuring the long-term sustainability of the project products. ABA can strengthen & support all project TED activities providing added value & multiple resource benefits through its dedicated network to the partnership. More importantly ABA can provide the long-term mechanism for successful sustainability of the project results beyond completion of the project. ABA develops and produces qualification guidance, quality training materials (including videos) and a wide range of other sources of information supporting trainers and learners managed and updated by a council of subject matter experts on a regular basis. Trainer, assessor and trainee standard setting update and refresher events are also held regularly supporting continuing professional development (CPD). The organisation hosts an electronic e-hub (library) for members and knowledge banks for specific subjects and industry sectors. Digital qualifications can easily be checked via the international database on a 24/7 epassport validating the professional status and currency of the qualification holder.

Location: Czech Republic

Area: 78,871 km²

Population: 10,827,529

Number of municipalities: 6258

Climate: Temperate continental

c. Aims and goals of the document

The second project result of VIRIDIS LOCI is the “Standards setting for operators/maintenance of green areas”. The result shares the same approach and overall goal with the first Standard Setting: it aims at picturing the current state of the art in the involved territories. However, if the first Standard Setting is focused on management aspects (especially from the PA), this current one targets on-the-ground workers, such as landscapers and arborists, to better understand the current working habits, practices and related issues. The target areas still remain the project ones: the three islands part of the project, then leveraging on a sample from the Czech Republic which will serve as a benchmark.

Therefore, the Standard Setting intends to act as the starting point of Viridis Loci project, aiming at improving targets’ skills. The partnership believes that this can be done only after learning about the current and effective knowledge among target stakeholders.

The Standard Setting can thus be seen as the first projectual foundation, to build on the next results and deliverables. As an exploratory deliverable, the VL Standard Setting has been developed collecting and elaborating different data, from partners’ countries, to have an overall frame of current and existing working habits and levels of the target stakeholders.

VL Standard Setting can represent an even more interesting deliverable considering that EU rules on environmental management have been updated recently, triggering changes into urban green management needs and demand - a new challenge that requires the upgrade in the skills of urban vegetation managers to fulfil ambitious EU goals.

Holding the new EU rules on environmental management as the compass (the gold standard) around which the evaluation/testing method will be structured, ANCI Sardegna is the partner responsible for the delivery of this first standard setting and for the analysis of the data set.

2. Methodology

The applied methodology follows a similar approach and path to the first Standard Setting. Since the common topics, the different targets rely on the same directives and laws: therefore, in this document, the legislative analysis has been skipped, recalling the one in the first Standard Setting.

a. Surveys and data collection

So, the first methodological step has been to identify the relevant stakeholders to proactively involve in order to achieve a clear understanding about practical green areas management. The partnership has identified the following relevant stakeholders:

- Municipalities that directly manage urban green areas, having maintenance workers (landscapers, arborists) as in-house service;
- External bodies (SMEs, freelancer, cooperatives) that manage urban green areas having contracts in place with the local bodies;
- Training and VET centres, that have a broader understanding of the needs and issues of the above categories.

To reach and engage these stakeholders, VL partners decided to develop and spread a new tailored survey, often spread via the municipalities, to easily reach the independent economic bodies managing the green areas. Overall, 26 replies were collected from the partners. The survey, spread via Google Forms, was developed in English and translated into partners' own language, consisting of a set of open-replies and multiple choice questions, both open and multiple option ones. The following questions were foreseen:

- What is the name of your company?
- Your contact email address is?
- Name the municipality/municipalities that you work for?
- How many years of working activity do you have?
- How many employees do you have?
- In which business segments are you active?
- Number of municipalities managed?
- Do you need any specific permits to operate and work?
- If YES to the above question, please specify.
- Are you entitled to apply pesticides?
- Are you entitled to work at height?
- If yes to the above question, please specify the type of work.

- Are you entitled to work in tree climbing?
- Do you have any volunteer certifications?
- If yes, please specify
- Are you certified accordingly to UN ISO standards?
- If yes, please specify
- Are you usually able to manage technical requests from municipalities or you leverage on external support?
- Are you using any GIS tools to manage urban green spaces?
- Which kind of weed management technique are you using?
- Are you applying any particular water management techniques?
- Are you applying any particular pest management techniques?
- Are you applying any particular soil management techniques?
- Are you using any particular procedures when planting a tree?
- Are you having any particular technical issues in your job (pathogens, pests) you are not able to deal with?
- If yes to the above question, please specify.

The survey was first decided during the transnational meeting in Assisi and the draft was then shared and developed, with the sign off in the Palma's meeting, thanks also to a refining during the occurred multiplier events. The surveys were then circulated and the results analysed by the partners, first at national level, then at community one.

Overall, 26 answers were divided as follows: 8 from Sardinia, 9 from the Balearic Islands, 3 from Madeira, and 6 from the Czech Republic, the latter with the purpose of having a benchmark.

b. Data analysis

Once gathered the information and formed the database, during VL transnational meetings, the partnership agreed on a common procedure to analyse and compare the collected data.

3. Results

The partnership collected 26 replies that were used to conduct the analysis. The analysis was done by each partner at national level, with then an overall coordination led by the coordinator. The data and its analysis can represent a valid sample of the Viridis Loci's territories, picturing the overall state of art of what is happening within the maintenance of urban green areas. Beside the first questions addressed to track the audience, the focus of the questions has been put on technical and practical aspects, rather than on management.

How many years of working activity do you have?

The aim of the question is to understand the actual experience of the involved arborists, and also to understand the correspondence to specific legislative needs. E.g. in Italy, SMEs active in the maintenance of urban greenery need a specific training course and qualification if the activity started after 2018.

For Sardinia (IT) 62.5% of the responses affirm that the municipal arborists have more than 20 years of experience in the sector, whereas for the Balearic Islands (ES) the picture is somewhat mixed with 44.4% of the arborists saying they have between 11 and 20 years of experience. Respectively 22.2% of the sample declared they have between 0 and 5 years of experience and another 22.2% said they have more than 20 years of experience. the situation in Madeira (PT) is similar to that of Sardinia since around 60% of the interviewees declared they possess more than 20 years of experience. In the responses from the Czech Republic, half of the sample affirmed to have 11-20 yr of experience, whereas 33.3% has 6-10 yr of experience under their belt.

How many employees do you have?

Similarly to the previous one, the question aims at having a better view on the structure of the actors active in the maintenance activity. Indeed, it is quite common to see singular workers/freelancers taking care of urban areas, and only sometimes more structured SMEs. Results have shown that in Sardinia, half of the respondents count more than 15 employees, in the Balearic islands on the contrary 55,6% of the sample declared to have between 6 and

15 staff, Madeira city alone employs 80 gardeners, constituting a third of the total responses,, and in the Czech Republic all firms in the sector employ more than 15 people.

In which business segments are you active?

The question is addressed to understand the business model of the involved actors. Indeed, often green-area keepers are simultaneously conducting different activities, such as nurseries, garden centres and similar ones. Moreover, sometimes it happens that the actors are active in a wide set of activities, not related to urban green areas, such cleaning ones, or general facility management. Usually, this lower specialisation leads to a minor quality in the provision of the services, especially if we look at tree maintenance, resulting in higher costs, lower environmental values and higher safety risks too.

Here, results show that 87.5% of the respondents in Sardinia are active in the Management of Parks and Public Areas, a figure that is almost identical to that of the Balearic Islands (88.9%). The questionnaires returned from Portugal do not contain any answers to this question, whereas the answers from Czech Republic once more confirm (66.7%) that firms in this sector are active mostly in Greenery management of municipal areas

Number of municipalities managed?

The amount of work with public bodies can be used as an indicator of the overall structure of the actor (SMEs or freelancers), with particular reference to its organisation and possible qualifications. In Sardinia, half of the respondents declare they manage between 0 and 2 municipalities, with a further 37.5% managing between 3 to 5 municipalities. Neither the Balearic Islands nor Madeira returned an answer to this question, whereas the sample Czech Republic shows that all of the respondents manage between 0 and 2 municipalities.

Do you need any specific permits to operate and work? If YES, please specify

As stated previously, in specific cases a qualification may be needed to work. This depends on the country, with differentiation among European countries. In Sardinia, 62.5% of the sample affirmed a qualification/licence is needed to carry out work, whereas the Balearic Islands did not provide any reply. Furthermore, both Portugal (66.7%) and the Czech

Republic (100%) confirmed that a qualification is needed in most cases. Going into the detail of what kind of work permits are needed to work in the sector, in Sardinia registration on the register of environmental managers is required, as well as landscaping authorization on restricted areas and licences for the use of pesticides and machinery. The Portuguese sample affirmed that licences on herbicide and pesticide application are required, whereas the Czech Republic sample answered that a secondary education in gardening is needed as well as specific training and certificates for climbing.

Are you entitled to apply pesticides?

Pesticides and agrochemicals are among the main sources of pollution, especially in urban areas where vulnerable and sensitive individuals (e.g., kids) can be exposed. Therefore, most European countries have introduced regulations, to limit the hazard and preserve the environment. The answers here show that in Sardinia 62.5% of workers are authorised to use pesticides, which corresponds to the 66.7% of workers in the Balearic Islands who possess such licences. The situation is more mixed in Portugal where only a minority of workers (around 10%) possess the necessary qualification and in the Czech Republic where the picture is split in half exactly between those who are entitled to use pesticides and those who are not.

Are you entitled to work at height? If yes to the above question, please specify the type of work.

Similarly, in the majority of European countries a permit is needed to conduct work at height, namely to use ladder trucks or similar machines. The reason behind this decision is due to safety, since incidents and fatalities working at height are among the most recurring ones. In Sardinia, 87.5% of the workers possess the necessary certification, in the Balearic Islands the percentage of qualified workers is 55.6%. In Portugal only a tiny fraction of the workers (around 1% of the respondents) owns this licence and in the Czech Republic the situation is once again split in half between those who possess the necessary qualifications and those who do not.

Are you entitled to work in tree climbing?

Tree-climbing has been a pioneering technique, widespread since the late '80 in Europe, to easily reach canopies and provide respectful prunings. This specialised working modality has been constantly refined in the last 30 years, with an increasing number of arborists legally entitled to apply the working technique. Indeed, due to the higher risk, it has been related to general working at height norms, with a mandatory course and licensing. Results show that in Sardinia the workers authorised to work in three climbing amount to 87.5% of the respondents whereas in the Balearic Islands 44.4% of the sample does not have access to this piece of information with a further 33% saying they are duly equipped for tree climbing. Portugal did not return any answers and the Czech Republic once again showed that half of the respondents can work in tree climbing whereas the other half cannot.

Do you have any volunteer certifications? If yes, please specify

Here the mention is to volunteer certifications, such as EAC and ABA ones, proving commitment to pursue quality in the working operations and a certain awareness of the maintenance working standards. The picture that the surveys compose is one where voluntary certifications are rare, with Sardinia replying no in 75% of the instances, the Balearic Islands replying negatively by 88.9%, Portugal virtually declaring only 2 workers possess a voluntary certification. The Czech Republic again shows that half of the respondents do not have any voluntary certification schemes.

Are you certified according to UN ISO standards? If yes, please specify

The most widely known ISO standards within green maintenance are 9001, 14001 and 8001. These standards, that are related more to the management side rather than the technical one, are seen as a positive proof of the SMEs in their work. Usually, these standards are also an awarding factor in public tenders.

Here, results show that in Sardinia 62.5% of the respondents do not possess the standard UN ISO, in the Balearic Islands 55.6% of the sample has it with a further 44.4% not having any UN ISO standard. In Portugal only two respondents have the UN ISO standard whereas in the Czech Republic 83.3% of the respondents possess such standard. The most often quoted UN IS standards are: ISO14001, ISO45000, ISO9001, ISO45001.

Are you usually able to manage technical requests from municipalities or you leverage on external parties?

This question is aimed at better picturing the actual state of knowledge within the category and the workers, analysing the municipalities' requests too. The answers show that in general firms in the sector are capable of managing requests from the municipalities. In Sardinia 75% of the sample responded affirmatively, in the Balearic Islands 77.8% responded in the same way. In Portugal 66.7% answered yes to the question and in the Czech Republic the totality of the sample declared they manage technical requests from the municipalities.

Are you using any GIS tools to manage urban green spaces?

Leveraging on GIS tools can allow municipalities to better manage their urban vegetation, and it provides benefits to the involved SMEs as well. Indeed, it can guarantee a better scheduling and reporting of the interventions, as well as a more capillary control of the territory. Regarding the use of GIS tools, the picture that the surveys return is somewhat one where the uptake of this technology is still not widespread. In Sardinia 62.5% of the respondents replied negatively, in the Balearic Islands those who gave a negative answer corresponded to 55.6% of the sample. In Portugal 66.7% of the workers do not take advantage of GIS tools, the same as in the Czech Republic (66.7%).

Which kind of weed management technique are you using?

Weed management is usually an issue in the relationship between municipalities and the ones taking care of the green areas. This because of the high amount of work needed to control and prevent an uncontrolled growth of weeds, characterised by high development rates during the growing season. Moreover, similarly to pest management, weed control active ingredients have been limited and banned in vulnerable areas. Therefore, it is - or should be - mandatory for maintenance workers to adopt a non-chemical and alternative weed management technique to perform the everyday work. Results show that the chosen method in most cases is the brush cutter (physical management technique) in Sardinia, the

Balearic Islands and Madeira. In the Czech Republic 66.7% of the sample replied that they do not deal with weed management, with a further 33.3% stating they use the brush cutter.

Are you applying any particular water management techniques?

In Viridis Loci's areas, water provision and availability is a true issue. Mediterranean summers are getting hotter, with an uneven distribution of precipitation, resulting in a general and long shortage. This means that urban areas are often left without irrigation, with water prioritised to human and pure agriculture use. However, water is crucial to make vegetation develop and provide ecosystem services. The need for alternative systems capable of rationally using the available water is thus crucial, also to not jeopardise the investments done. Here, respondents chose a range of techniques. In Sardinia workers use drip/sub irrigation the most often, same as the Balearic islands (88.9%). In Madeira, besides the same technique, wetting agents are also used. In the Czech Republic half of the sample declared to use a water storage system to manage water.

Are you applying any particular pest management techniques?

Pest management is a critical topic, especially in urban areas. Recent directives are more and more limiting the range of available active ingredients that can be applied, and in urban areas this is even more true due to further restrictions. Nevertheless, managing pests is still needed, sometimes to safeguard human safety too. Because of that, with this question, VL partners want to understand if the regulations are respected, and if so, which alternative methods are put in place. In Sardinia the most often used techniques are natural agents (e.g. antagonistic fungi) and some endotherapy. In the Balearic Islands endotherapy is preferred by 88.9% of the sample followed by integrated pest management. In Madeira, workers like using both Integrated Pest Management and Pesticides.

Finally, in the Czech Republic, it was found that 50% of the sample uses natural agents, such as antagonistic fungi.

Are you applying any particular soil management techniques?

Urban soils are well-known for their low properties, with water retention issues and overall low organic matter, due to compaction. This results in adverse conditions for vegetation to live in - and therefore it is interesting to see if and how landscapers and arborists are facing the problem, that most of the time is not even known.

In Sardinia half of the sample declared they prefer using aeration followed by application of biostimulants. In the Balearic Islands 55.6% of workers declared they do not use any particular technique followed by those who said they use a soil improvement application.

In Madeira, by far, soil improvement applications are the preferred soil management technique, whereas in the Czech Republic 33.3% of the sample voted for soil improvement application, 16.7% for the use of biostimulants and another 16.7% for aeration.

Are you using any particular procedures when planting a tree?

Tree planting is a crucial operation that has a huge impact on tree survival rate in the first years of a tree's life, as well as in the long run. Several case studies and research have proven as a positive solution the use of different underground systems to anchor tree root systems, with good effects on long term stability and trees' growth and development. However, often due to lack of knowledge and awareness, and due to budget restrictions, most of the municipalities and SMEs still use artisan systems, such as sticks, with no certifications and overall negative results. In this case, all the four territories of the project replied decidedly that they use external plant securing in this crucial phase of a tree's life.

Are you having any particular technical issues in your job (pathogens, pests) you are not able to deal with? If yes to the above question, please specify.

The final question has been put to leave room to the audience to flag particular problems and issues. The replies show that in general workers are able to deal with technical problems when they arise. Among those who replied affirmatively to this question, pathogens and pests are mentioned such as *Ips typographus*, *Cameraria ohridella*, *Cydalima perspectalis*, Erysiphalles, Aphids, and holm oak parasites.



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4. Conclusions and next step

The aims of this project result are to evaluate and assess the state of art among particular target stakeholders, and to actively engage the same stakeholders - namely, the ones in charge of managing urban green areas, such as SMEs, municipal workers, landscapers and arborists. This evaluation - conducted with a tailored survey - is crucial to better understand how maintenance of urban greenery is planned and implemented. This is interesting also in regards to taste the actual implementation of various European directives and national/local norms, that are increasingly pushing for a more sustainable, regulated and safer approach to urban areas maintenance.

Furthermore, a conscious greenery maintenance can assure higher quality in the service, resulting not only in less working accidents, but also in an overall better fitness of urban vegetation - and therefore higher ecosystem services offered: e.g., better pruning techniques, with no topplings, assure larger amount of stored Carbon per tree.

However, if this is clear on a theoretical level, the practical implementation seems still missing. Indeed, thanks to the survey and also a broader stakeholders engagement, the Viridis Loci partnership realised that the path to a complete implementation of European directives and an overall awareness of greenery maintenance is still a long one. Despite different nuances between countries, results show a similar level and comparable pictures. Among the collected replies, the following ones deserve a particular attention:

- In each country, more than 50% of the repliers are not leveraging on GIS tools - and a similar result emerged from the first Viridis Loci Standard Setting. This underlines the need for specific VET formation in this field, upskilling digital competences of the target audience to have better maintenance.
- Specific working techniques are used instead of chemicals - e.g., brush cutter used as weed management techniques. If this is compliant with Eu directives - to avoid the use (or, abuse) of agrochemicals, other techniques may be applied, with higher results in terms of productivity and weed management effects.
- Quality and voluntary certifications seem not widespread among the audience. If we combine this data with the answer coming from the tree-climbing certification, it is

clear that it is crucial to further engage stakeholders in order to make them more aware of the importance of these certifications. Without a continuing formation process, it is not possible to reach higher working standards.

- Viridis Loci's territories are highly exposed to climate change and the increasingly less availability of natural resources. In example, water is a stated issue and its management is mandatory to assure vegetation survival, growth and development. In light of this, it is encouraging that stakeholders are actively implementing specific techniques - such as drip/sub irrigation - and using new solutions, such as wetting agents - to increase water efficiency. However, if water is perceived as an issue, stakeholders seem less aware of soil management techniques and of the available alternatives in the pest management areas - topics to be developed in the next results of Viridis Loci.

Overall, the survey and the following analysis provided a starting point to further develop the VET experience for the selected stakeholders. The collected results will be exploited in developing the upcoming guidelines and technical results, with practical case studies, to upskill maintenance workers and managers to have a more sustainable urban environment.



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