



European
Tree
Technician

MANUAL
for Training
and Certification

MANUAL for Training and Certification

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INFORMATION ABOUT THE PROJECT:

Project name: PROMOTION AND ALIGNMENT OF EUROPEAN TREE TECHNICIANS (ETT) QUALIFICATION IN EUROPE

Project Nr.: 2020-1-LV01-KA202-077586

Project implementation period: 01.09.2020 - 31.08.2023

Leader of the Project: Bulduru Tehnikums SIA (Latvia)

Partners of the Project:

- European Arboricultural Council
- Instytut Drzewa Sp. z o.o. (Poland)
- Luua Metsanduskool (Estonia)
- Praktijk Centrum Bomen (Netherlands)
- SkovByKon (Denmark)
- Sveriges arboristförbund SAF (Sweden)
- VIVES Hogeschool (Belgium)



Co-funded by the
Erasmus+ Programme
of the European Union

The publication was created as a result of a project implemented with the financial support of the European Commission under the Erasmus + programme. The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



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Table of contents:

1. INTRODUCTION.....	7
1.1. The Aim of the Manual.....	7
1.2. Who is this Publication for.....	8
2. BASIC INFORMATION ON THE EAC AND THE CERTIFICATION OF EUROPEAN TREE TECHNICIANS.....	9
2.1. About the European Arboricultural Council (EAC).....	9
2.2. Who is a Certified European Tree Technician (ETT).....	10
2.3. ETT Competencies.....	11
2.4. ETT Roles.....	16
2.5. Stakeholders and ETTs.....	16
2.6. Arboricultural Challenges and the ETT.....	17
3. ETT CERTIFICATION PROCESS AND ETT EXAM PREPARATION.....	19
3.1. What is ETT Certification.....	19
3.2. How to Become an EAC Official ETT Certification Centre.....	21
3.3. How to Certify ETTs - Certification Rules.....	21
3.4. How to Recertify an ETT.....	21
3.5. How to Prepare an ETT Exam.....	22
4. HOW TO PREPARE AND CONDUCT ETT TRAINING BEFORE CERTIFICATION.....	31
4.1. General Rules and Teaching Methodology Issues in Lifelong Learning: What is Good to Know.....	31
4.2. Trainer Competencies and Qualifications.....	34
4.3. How to Prepare and Conduct Training.....	35
4.4. The ETT Study Guide as an Aid for Training.....	43
4.5. Examples of Materials for Training.....	43
5. ETT UP-DATE TRAININGS.....	45
5.1. Identifying the Educational Needs of Experienced Adults.....	45
5.2. Communication and Motivation of Potential Trainees.....	46
5.3. New Competencies and Standards: Training Topics and Benchmarks.....	47
6. HOW TO PREPARE A TRAINING PROGRAMME BASED ON ETT CURRICULUM AND ETT EXAM RULES.....	53
7. LIST OF APPENDICES.....	55

APPENDIX A. Challenges identified in the survey conducted during the Project

APPENDIX B. ETT candidates form used in the Project

APPENDIX C. References - sources for trainers

APPENDIX D. Detailed programmes of the training / syllabuses of chosen topics

Syllabus related to Study Guide chapter 1.1.1. *Tree Function and Structure*

Syllabus related to Study Guide chapter 1.5.1. *Diagnostic Features*

Syllabus related to Study Guide chapter 1.5.2. *Tree Assessment*

Syllabus related to Study Guide chapter 1.6.2. *Tree Revitalisation*

Syllabus related to Study Guide chapter 1.2.1. *Soil Science*

Syllabus related to Study Guide chapter 1.2.2. *Site Selection (Tree and Soil Alignment)*

APPENDIX E. Examples of training simulations tasks used in the Project workshops
(Part 3: Management Exercises in Economy, Law and Social Studies / Practical Part)

Preparation of a contract and plan of approach for the city of Bosbergen

Advice on new tree planting for the municipality of Enschede

Revitalization museum castle park Ruurlo

APPENDIX F. Examples of ETT exam content based on the Project test exam in Wroclaw
in April 2023 (Available on EAC infocenter website)

Part 1: Written examination - based on trial exam used in Belgium in June 2023

Part 2: Management exercise in Tree inspection

Exam Assignment: Impact assessment building Terrace and Teahouse

Example Score sheet ETT exam Part 2

Map for candidates

Part 3: Management Exercises in Economy, Law and Social Studies

Exam Assignment: Replacement of trees in the Avenue Dr Cartier Road in Lochem

Example Score sheet ETT exam Part 3

Example ETT exam Planning sheet for 14 candidates

Example ETT Exam Matrix Wroclaw April 2023





1. INTRODUCTION

1.1. THE AIM OF THE MANUAL

This manual has been developed to support both the preparation of training and courses for candidates for the European Tree Technician (ETT) certification and the examinations themselves according to the regulations and procedures for certification established by the European Arboricultural Council (EAC). It is one of the results of the project implemented in partnership with eight countries from 2020 to 2023, aiming at PROMOTION AND ALIGNMENT OF EUROPEAN TREE TECHNICIANS (ETT) QUALIFICATION IN EUROPE, co-financed by the ERASMUS+ Programme, Project Nr. 2020-1-LV01-KA202-077586 (more details one can find on editorial page).

Each educational centre may prepare and carry out training for ETT candidates in their own way according to the certification requirements in its key documents, i.e., the current European Tree Technician Curriculum and the European Tree Technician Certification Exam Rules & Regulations discussed in Chapter 3. The training

system for ETT certification is not covered by official EAC guidelines, and to date there have been no grassroots publications on the training process in this area. This publication is intended to facilitate the preparation of this training and includes suggestions for such training, the tools used, educational materials, and sample training programmes on selected topics. Simple methodology guidelines for trainers have been prepared which take into account the specific requirements necessary to ensure successful lifelong learning for active adults.

In line with the project's objectives, this manual also covers content designed to support the preparation and conduct of the ETT certification exam, based on current EAC guidelines and the results developed in the Erasmus+ Project. Other Project results, in particular the ETT Study Guide, the Aligned ETT Exam Matrix, and the new European Tree Technicians (ETT) Curriculum are complementary to this publication.

NOTE:

The ETT certification process must be carried out in accordance with the official regulations published by the organisation managing this certification, the European Arboricultural Council (EAC). This manual does not replace these regulations. It is only intended to help you better understand the certification and its rules in order to prepare the exam more efficiently. As a result, and in line with the objectives of the Erasmus+ project, it will help to standardise the implementation of the currently applicable ETT certification guidelines across different certification centres. The advice given in this manual should always be checked against the current official regulations of the EAC available on the organisation's website, from the EAC head office, or from your national EAC member.

1.2. WHO IS THIS PUBLICATION FOR

We address this manual to all those interested in ETT certification - both the exam itself and in preparing it for candidates, in particular:

- New and existing training centres
- Trainers
- Potential, nominated and existing EAC certification centres
- Examiners

The publication may also be of interest to candidates, helping them get an idea of the process, requirements, and procedures of the examination. Current EAC supervisors and supervisor candidates may also find it useful. Some of the content may also be useful for trainers and educational centres, as well as for certification centres in other fields in the arboricultural industry not related to ETTs (e.g., general guidelines for the preparation of written exams or an inventory of tools useful for practical field training in tree assessment).

2. BASIC INFORMATION ON THE EAC AND THE CERTIFICATION OF EUROPEAN TREE TECHNICIANS

2.1. ABOUT THE EUROPEAN ARBORICULTURAL COUNCIL (EAC)

The European Arboricultural Council (EAC) is an organisation dedicated to promoting and advancing the field of arboriculture across Europe. The EAC serves as a platform for collaboration and knowledge exchange among arborists, tree care professionals, and researchers from different European countries.

In collaboration and cooperation with organisations and individuals in the arboricultural industry, both in Europe and beyond, the Council works towards the development of standards, guidelines, and best practices in arboriculture, with a focus on tree health, preservation, and safe work practices. Through its initiatives, the EAC aims to raise awareness about the importance of trees, their benefits to the environment and society, and the need for their proper management and care.

The European Arboriculture Council plays a significant role in fostering professional de-

velopment opportunities, organising conferences, workshops, and certification schemes to enhance the expertise and skills of arborists, thereby ensuring the sustainable management of trees and green spaces in Europe.

The EAC brings together organisations from different European countries that represent the arboricultural industry in their respective countries.

At the time of preparing this manual, the EAC is managing and coordinating two certifications: the European Tree Worker (ETW) and the European Tree Technician (ETT), and one award scheme for European cities, the European City of Trees (ECOT). In addition, it is serving as a management body for the veteran tree specialists' certification scheme, VETcert, and is responsible for its central administration and certification (Veteran Tree Specialist at 2 levels - Consulting and Practising).

Full information on the EAC, including the details of its current members, can be found on the organisation's website, where you will also find the applicable guidelines for ongoing certifications, the EAC's Code of Ethics for certified ETWs and ETTs, information on current events, publications, and details of certification centres. (<https://www.eac-arboriculture.com>)

2.2. WHO IS A CERTIFIED EUROPEAN TREE TECHNICIAN (ETT)

According to the definition in the ETT Curriculum (Version June 2023, officially accepted by EAC to be launched in 2024),

"A European Tree Technician is defined as a person employed in, or aspiring to, junior middle management, or taking a supervisory role in arboriculture. European Tree Technicians are skilled in operations on and in amenity trees, with the aim keeping them healthy and safe whilst bearing in mind the demands of biodiversity. In particular, they act on the basis of current best practice within arboriculture, conservation, environmental protection and work safety. ETT is able to involve in other professional partners when necessary, e.g. architects, civil engineers, ecologists, legal specialists etc. They work as a coordinator communicating with all involved partners and the practical people in the field, while keeping an overview of the whole process of practical tree work. Their field of competence also includes technical knowledge and organisational and supervisory skills."

Summing up the roles of an European Tree Technician, we can say that he or she is someone who works in a preparatory, guiding, investigative,

or supervisory role within tree care. He/she is often the intermediary between the client and executing parties in the public space for projects that take place in the vicinity of trees. He/she understands how the processes work and under which conditions the parties must work together. The ETT also has the knowledge and skills to organise (tree) projects and supervise their correct implementation. To do these tasks well, the ETT must have good reporting and advisory skills. He/she must be able to conduct conversations with and give presentations to various stakeholders in the public space and be able to represent the role and importance of trees in the public and private space.

Collecting and analysing data is an important part of the work. This is essential to being able to draw correct conclusions and then substantiate them properly to the client. The ETT can advise clients at a strategic and tactical level to make the right choices for their tree policy and management in the future.

Due to the increasing awareness that trees represent an important opportunity to reduce the negative effects of urbanisation and climate change, the ETT has an important role to play. Together with other with professionals technical disciplines



Fig.1: The three main areas of ETT involvement - individual trees (1), trees in the context of project implementation in their surroundings (2) and consultation work and reporting (3).

Source: Paulina Sanecka, based on the concept of Willem van Delft

such as civil engineers, cable layers, and constructors, he/she must sometimes be able to develop technically complex solutions for development sites.

Trees make an important contribution to biodiversity and ecosystem services. An ETT can also advise clients on making the best choices in tree management regarding these topics.

the organisation's website. The Curriculum is the starting point for all training work for ETT candidates; a good knowledge and understanding of its provisions is a prerequisite for successful training.

In the proposed new ETT Curriculum, developed during the project - Version June 2023 approved by EAC (in this manual as Version June 2023 officially launched in January 2024), the competencies of an ETT are grouped into four main areas, each indicating key areas of knowledge or skills (see Fig. 1 and Fig. 3). In each of them, one can find details of the areas of knowledge and skills expected of ETTs in the subsequent sub-areas. Arranging it in such a system helps in the field of education to identify competency gaps, define training objectives, create knowledge tests; and, in the field of certification, to establish rules for recruiting candidates and define examination tasks covering the widest possible competency spectrum from that defined area (see Chapter 3.5).

2.3. ETT COMPETENCIES

The full set of competencies of a certified ETT accepted officially by the EAC is outlined in the **European Tree Technician Curriculum**. The ETT Curriculum has been updated from time-to-time according to industry requirements. The current Curriculum is available as an official document on

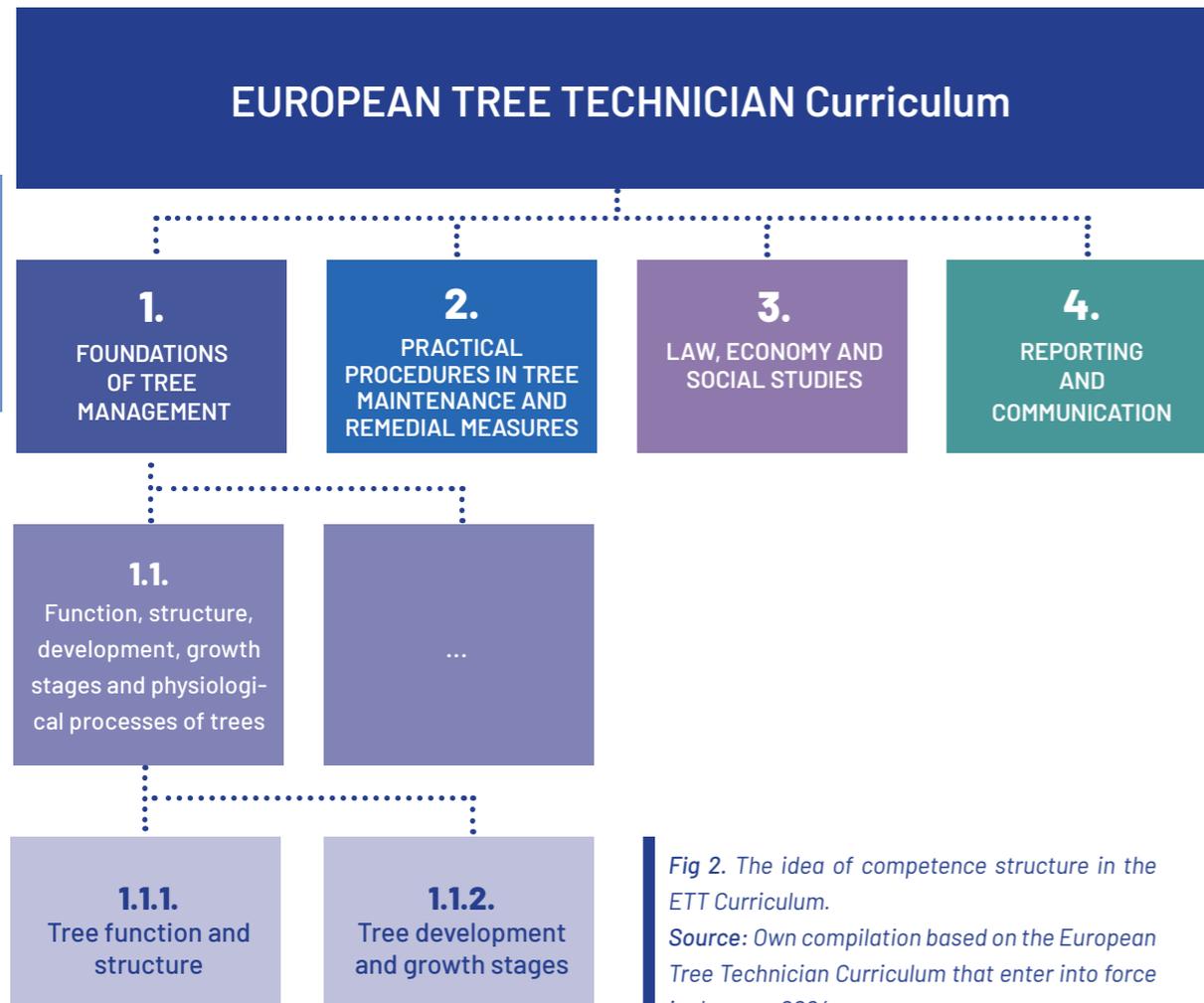


Fig 2. The idea of competence structure in the ETT Curriculum.
 Source: Own compilation based on the European Tree Technician Curriculum that enter into force in January 2024

It is worth noting that the Curriculum does not include many of the competencies implicitly possessed by certification candidates, e.g., those connected with basic tree inventories. As with other certifications, it is assumed that lower-level competencies have been acquired through previous education and work experience and, for example, confirmed by other known certifications. These competencies can be checked by analysing the Curriculum of the certifications indicated in the prerequisites, e.g., European Tree Worker.

Fig 3. Competencies from the selected area 1. FOUNDATIONS OF TREE MANAGEMENT expected from a certified ETT
 Source: own compilation based on the European Tree Technician Curriculum. Version June 2023

EXAMPLE

How to read the ETT Curriculum (Version June 2023)

Each of the 4 main Sections of the Curriculum contains several sub-topics developed into a set of specific competencies. In these Sections, one can read not only the range of expected knowledge and skills but also the expected level of detail and sometimes also the attitude of self-reliance and responsibility required. For example, as can be seen below, Section 1. FOUNDATIONS OF TREE MANAGEMENT primarily defines the expected ETT knowledge in different areas of arboriculture necessary to recognise, understand, describe, or explain the phenomena and events related to trees and their management. The Curriculum indicates the minimum competencies required of an ETT appropriate to the qualification level.

1. FOUNDATIONS OF TREE MANAGEMENT

1.1. Function, structure, development, growth stages, and physiological processes of trees

1.1.1. Tree Function and Structure

The European Tree Technician has the knowledge necessary to:

- appreciate the basics of tree biology and their relevance to modern arboricultural practice;
- recognise the external features (morphology) of trees;
- identify and describe the anatomical and physiological features and functions of the tree;
- give a detailed account of the lateral branch to trunk union and describe how pruning techniques must be adapted to this feature;
- describe the processes of callus and wound-wood production as a response to injury;
- describe the main defence mechanisms of the tree with reference to injury, including compartmentalisation;
- highlight the influence of environmental factors on tree physiological processes;
- show a basic understanding of root-plate architecture and morphology and how it affects the stability of trees;
- create for him/herself an image of the rooting pattern;
- show an understanding of crown structure, wind-sail factors, and crown balance; and
- explain the positive and negative features of co-dominant stems and multiple stem attachments.

By analysing the entry requirements for ETT candidates, the training centre can help identify possible competency gaps due to the specific experience and previous training of the candidates and suggest appropriate learning pathways. More on this in Introduction Test Chapter 4.3.2.

As a result of the ETT 2020 Erasmus+ Project, the existing EAC ETT Curriculum has been supplemented with new competency areas, previously either covered in less detail or not covered at all. These new competencies include, in particular, topics related to soil, invasive species, and the assessment of the value of trees, including their ecosystem services. In addition, the knowledge requirement of the value of trees and related processes for biodiversity (e.g., wood decomposition) has been broadened.

The updated Curriculum also refers to industry standards, e.g., in the execution of work and health and safety. It emphasises digital competence and the ability to use industry tools for inventories and to assess and prepare action plans. There is less emphasis on the candidate carrying out tree work (other than assessing the tree, its habitat, and surroundings) and more emphasis on explaining, planning, controlling, and managing it. The extended Curriculum also describes more roles that an ETT can expect to take on as a manager or

consultant, such as planning, coordinating, and supervising the work in an ongoing relationship with the client and tree workers. An important part of the ETT's work is the analysis of the request for quotation or assignment, preparation of the offer, quotation, and preparation of the plan, including the approach, the plan of action, communication and reporting in a digitised form. A good level of competence in communication with the general public and the various stakeholders involved in the process is also expected. These new or extended competencies are in line with the expectations of the industry and the challenges indicated in the branch survey conducted in 2021/2022 as part of the Project (see Annex A).

As the new areas in the Curriculum may be challenging for centres already training ETTs, it is advisable to review existing curricula and, if necessary, to retrain trainers and/or hire new ones. However, the new areas can also be an interesting addition to the training the education centre currently offers, as training topics for ETT re-certification or for other industry professionals. New or modified competencies can be identified by comparing the existing Curriculum with the new document. The main changes are in Section 4, which is practically new. More in Chapter 5: ETT update training.

BACKGROUND METHODOLOGY

When analysing the ETT Curriculum as a set of expected competencies, it is useful to know about the so-called qualification framework, which organises qualifications into three main areas: **knowledge** (theoretical or factual), **skills** (cognitive - using logical, intuitive, and creative thinking; and practical - relating to manual dexterity and the use of methods, materials, tools, and instruments) as well as general competencies in terms of **responsibility and autonomy**. Qualifications can be defined in terms of the levels of progression, often compared to learning outcomes in formal systems, e.g., the school system or further education, and are necessary to undertake and perform work at an appropriate level.

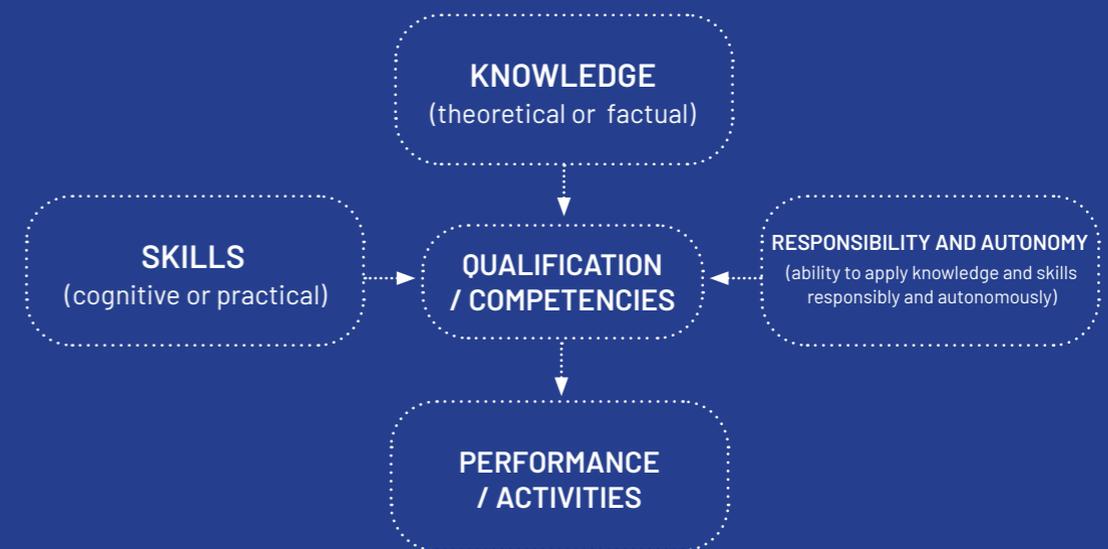


Fig 4. Competence structure vs. task performance

Source: Own elaboration based on the European Qualification Framework definition

(https://en.wikipedia.org/wiki/European_Qualifications_Framework. Accessed 7 06 2023)

The ETT Curriculum and the competencies it contains have not yet been formally described in accordance with the European Qualifications Framework; locally they can be assigned to different levels.



2.4. ETT ROLES

The European Tree Technicians can perform a variety of roles in the tree care and management process; they have a broad remit and can be engaged in the following kinds of work:

- assessing and valuing existing trees;
- designing/developing projects that involve work on trees and their surroundings;
- consulting on construction projects;
- acting as manager of a team of tree workers;
- supervising contractors that perform tree work; and
- supervising contractors who carry out other work around trees.

The ETT carries out both field (outdoor) and indoor work, working at different stages of the project - from the introduction, preparation of the overall approach to the problem, design of the action plan, preparation of the quotation and the contract, as well as the implementation of the work, its execution, and control - a process is shown in the diagram in Figure 5.

2.5. STAKEHOLDERS AND ETT

In an arboricultural project/assignment, many groups of stakeholders can be identified, including internal stakeholders - those connected to the project - and external stakeholders - those not directly connected to the project but influencing it (real or potential). The ETT should be able to define the stakeholder groups of the ongoing project, recognise them and their most important representatives in practice, and adapt the style and methods of communication to take into account their particular place in the project. The ETT can represent different stakeholder groups, depending on his role (see Figure 6).

Fig. 5. A diagram of the work in which the ETT can take part in various roles.

Source: ETT Study Guide, 2023.

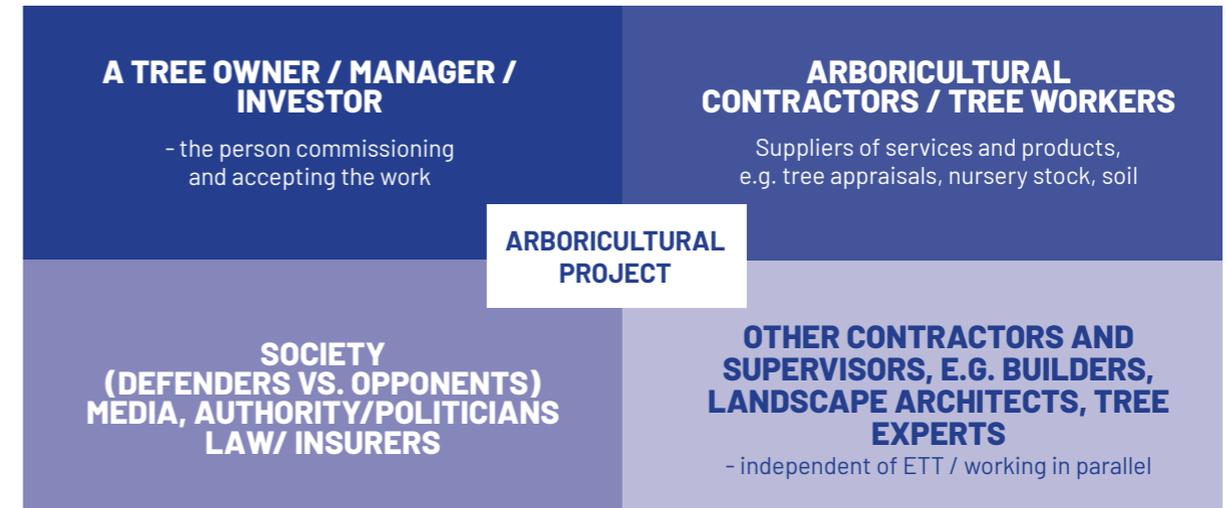
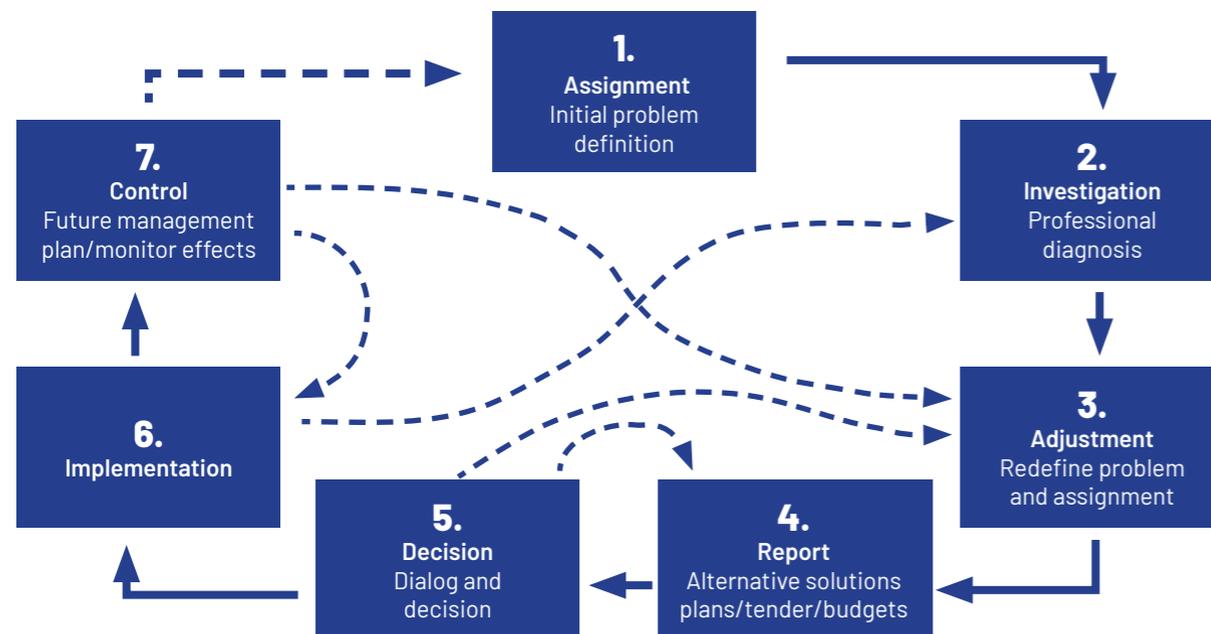


Fig. 6. Examples of Stakeholder Groups in an Arboricultural Project

Source: ETT Study Guide, 2023.

2.6. ARBORICULTURAL CHALLENGES AND ETT

The contemporary issues facing the arboricultural industry present ETTs with challenges for which they must be prepared by obtaining the appropriate competencies and practical experience. The challenges to which the industry, or any ETT, are responding are also the result of the implementation of a number of normative acts related to nature and working with nature. In particular, these include urban forestry and urban green infrastructure in which trees play a key role, as set out by the United Nations Sustainable Development Goals, the New Urban Agenda, also mentioned by organisations such as FAO, WHO Healthy Cities, and UNECE, among others. Among these global and European goals and strategies incorporated into the Green Deal¹ are:

- EU Biodiversity Strategy 2030
- EU Forestry Strategy 2030
- EU Soil Strategy 2030
- EU Strategy on Adaptation to Climate Change
- EU Urban Agenda
- EU Nature Restoration Law

The results of the European survey conducted by the project (see Annex A) indicate that there will be an increase in demand in the arboricultural industry for highly qualified and knowledgeable consultants who are prepared for work that is not only technical, but also requires proficient communication skills. The ETT Curriculum update realised in the project respond to mentioned challenges. Those particularly worth noting in terms of training for ETTs are:

- Biodiversity loss,
- Climate change,
- Valuing trees, including their eco-system services,
- Integration into urban infrastructures (green, blue, grey),
- Strengthen the importance in policy,
- Growth of data management & new technologies

¹ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en accessed 07 06 2023



3. ETT CERTIFICATION PROCESS AND ETT EXAM PREPARATION

3.1. WHAT IS ETT CERTIFICATION

The European Tree Technician certification is developed and managed by the European Arboricultural Council, and it confirms the possession of the competencies described in the ETT Curriculum. The current information is available on the EAC website in the ETT section (<https://www.eac-arboriculture.com/ett-intro.aspx>).

Confirmation of certification is provided by a named diploma and a named card (plastic card), both issued to the individual with a unique ID number; and publication of the data (with the expiry date of the certificate) on the list of certified ETTs on the EAC website.

The certificate is valid for **3 years following the year of certification** for those who have passed a certification exam at one of the EAC-accredited centres (note: a certificate obtained in 2023 expires in December 2026). The certificate can be renewed by the local national certification centre after the defined conditions have been met for further years, with the date displayed next to the name of the certified person. The annotation 'to be renewed' will appear after 2026, when the first certificate expires, and can currently be seen on the corresponding European Tree Workers (ETW) list.



Fig. 7. ETT diploma and ID card with limited certificate validity until December 2025.

Source: <https://www.eac-arboriculture.com/ett-intro.aspx>

Certified European Tree Technicians

Country

Last name	First name	Validity
[REDACTED]	Fredrik	12/2025
[REDACTED]	C.	12/2025
[REDACTED]	Jörg	12/2025
[REDACTED]	Marcin	12/2025
[REDACTED]	James C.	12/2025

Fig. 8 Sample list of certified ETTs for Sweden. Personal data concealed.

Source: <https://www.eac-arboriculture.com/certified-european-tree-technicians.aspx>

3.2. HOW TO BECOME AN OFFICIAL ETT CERTIFICATION CENTRE

EAC-accredited Certification Centres (CC) are shown on the EAC website with address details, information about the certification, and the contact person. For up-to-date information and accreditation rules for certification centres interested parties should contact the office of the European Arboricultural Council e.V. (EAC), contact form: <https://www.eac-arboriculture.com/contact.aspx> or by e-mail: office@eac-arboriculture.com.

3.3. HOW TO CERTIFY ETT - CERTIFICATION RULES

The current full set of rules for the European Tree Technician certification officially accepted by the EAC is available on the web page <https://www.eac-arboriculture.com/infocenter-ett.aspx#rules>. It covers all the requirements to be met by a certification centre.

The Erasmus+ project 'PROMOTION AND ALIGNMENT OF EUROPEAN TREE TECHNICIANS (ETT) QUALIFICATION IN EUROPE' has helped to develop a benchmark for a unified model of the ETT certification exam according to an updated list of competencies. However, the set of rules for the examination is still quite general and leaves a lot of room for the certification centre to conduct an examination appropriate to local conditions.

The rules to be implemented include the conditions of entry for candidates, the content and timing of the various parts of the examination, the passing threshold, the examination, and the composition of the exam content. Examinations must be attended by an EAC nominated Supervisor.

2. <https://www.eac-arboriculture.com/detail-information-ett-rec1.pdf?forced=true> accessed 31.08.2023

3.4. HOW TO RECERTIFY AN ETT

According to the EAC rules, an European Tree Technician can renew his/her certificate before it expires through an EAC Certification Centre that offers ETT exams. Recertification can be obtained by submitting the following documents to the exam provider or certification centre:

- Proof of tree care consultancy or management work at ETT level in 24 of the previous 36 months.
- Proof of participation in lifelong learning (LLL)/ continuous professional development (CPD) forms relevant to the ETT Curriculum for a total of 45 hours during the previous 36 months. Presentation or lecturing hours at ETT level can be included.

Proof of LLL/CPD may take the form of participation in workshops, seminars, courses, arboricultural events, in-company training, additionally obtained qualifications, etc. - everything contributing to the further development of lifelong learning in connection with tree diagnosis, consultancy, inspection and management, demands of biodiversity, conservation, environmental protection, work safety, technical knowledge, and organisational and supervisory skills.²The first recertification procedures will be carried out from the end of 2025.

NOTE:

Training centres can take into account the learning needs of current ETTs and introduce special training, such as lectures and/or workshops appropriate to the level of ETTs with appropriate confirmation of participation and the number of training hours. For former ETTs, it is particularly worthwhile to prepare training courses covering new competencies.

3.5. HOW TO PREPARE AN ETT EXAM

The ETT certification exam is prepared and conducted by the exam board of the exam provider, officially accredited by the EAC (EAC Certification Centres) based on the guidelines from the official ETT Certification Rules and Regulations³ and according to the current ETT Curriculum. The content is sent to the supervisor within the agreed-upon deadlines. In frame of ETT'2020 Erasmus+ project an aligned ETT Exam Matrix has been prepared. This chapter provides additional guidance to assist in the preparation of examinations in addition to the official guidelines and provisions in the regulations. Certification centres are, however, not under any obligation to implement these additional guidelines.

The CC's certification task involves, in particular:

- communication with the EAC Office and the EAC supervisor nominated by the EAC Office;
- exam online registration;
- the admission of candidates and verification of entry requirements;
- employment and training of examiners;
- preparing the content of the examination;
- organising the examination venue and timetable;
- enabling the EAC supervisor to supervise the exam;
- preparation and conduct of the examination;
- preparation of the examination results and their transmission to the EAC and to the candidates;
- the order and delivery of certificates; and
- financial settlement of the examination.

3.5.1. RECRUITMENT OF CANDIDATES AND VERIFICATION OF ENTRY REQUIREMENTS

The current requirements for candidates are set out in the ETT Certification Regulations. The pre-requisites should be tested by means of a pre-screening form for candidates to check that the conditions are met and to obtain the necessary consent for further processing of personal data.

EXAMPLE:

In the ETT Certification Rules current for 2023, the ETT examination is open to those candidates who can prove that they have either a European Tree Worker certificate or a certification or diploma in the green industry recognised by a national arboricultural organisation together with the EAC and have at least 3 years current experience in the field of green industry.

The EAC has specific procedures for registering exams and candidates (an online registration system available to CCs) and its own forms for CCs to check the minimum requirements/entry path of given candidate (more details will be given to the EAC accredited CC).

The CC can prepare its recruitment form, either written or online, to collect candidate data and evidence of pre-requisites. It is important that it takes into account the law on the processing of personal data and other relevant requirements, such as agreeing to the EAC Code of Ethics. For candidates from a pathway other than the ETW certificate, the basis for acceptance should be guidance from the EAC and the local EAC's national member organisation. Some CCs interview previously unknown candidates to check their range of experience or certifications. Such an interview can be particularly useful for candidates who have not received specific training before the examination, e.g., to catch competency gaps.

Candidate documents should be kept in accordance with the law and be available to the EAC supervisor at the time of the examination upon request.

3.5.2. STAFF & EXAMINERS

A slightly different set of aids, examiners, and assistants is needed for each part of the examinations. The different roles can be performed by the same people as long as they are compatible with the competencies and the timetable, and any role conflicts are avoided. An EAC supervisor, nominated by the EAC office and independent

to the examining board, must also be present.

When planning the examination schedule the staff should take into account:

- the minimum and maximum required examination time per part according to the EAC ETT Certification Rules and Regulations;
- the time required for administration and breaks for examiners;
- the time for the technical work of copying answer sheets and preparing documentation;
- the time needed to move between the different stations and examination sites;
- the time needed to check the papers if they are to form the basis for the next part of the examination (e.g., the answers in Part 3 may become the content of the questions in the oral part of the examination);
- a good balance between the number of candidates and examiners; and
- a certain reserve of contingency time.

In the table below (Fig. 9) different personnel requirements are gathered. The CC decides both the number of staff and how their various roles are to be assigned. The aims are to fulfill the EAC exam rules and provide at least the minimum number of examiners and assistants.

PART 1: WRITTEN EXAMINATION	PART 2: MANAGEMENT EXERCISE IN TREE INSPECTION	PART 3: MANAGEMENT EXERCISES IN ECONOMY, LAW, AND SOCIAL STUDIES
<ul style="list-style-type: none"> • 1 invigilator to supervise the candidates in the facility during writing. • examiners to assess the answers (possibly several different ones for each part of the examination according to the competencies) – usually a minimum of 2. 	<ul style="list-style-type: none"> • 1 competent assistant to supervise candidates during fieldwork (must speak the local language and have good communication skills). • examiners to assess the candidate during the oral examination (if not regulated in official rules recommended a minimum of 2, a larger groups may need more teams of examiners). 	<ul style="list-style-type: none"> • 1 invigilator to supervise the candidates in the facility during writing. • examiners to assess the answers (if not regulated in official rules recommended minimum of 2) and for the oral part of exam (a larger group may need more pairs of examiners).
<ul style="list-style-type: none"> • 1 person who registers the candidates. • 1 assistant who acts as an interpreter for the EAC supervisor, if necessary. • 1 person who controls the candidates waiting for their exam. 		
<ul style="list-style-type: none"> • 1 Head of Examination Board who collects the results, controls the examination process, and signs the issued certificates after the exam. 		

Fig. 9 ETT Exam – Staff Roles and Minimum Numbers Recommended

Source: own elaboration

³ <https://www.eac-arboriculture.com/infocenter-ett.aspx#rules> accessed 7.06 2023

Examination staff should be visible and distinctive (easily recognised by the supervisor also, e.g., wearing Hi-Viz vests of different colours to those of the candidates, with badges etc.), be presented to the candidates, and be accessible to other exam participants.

The timetable, venue, and order of candidates may be announced verbally, but it is highly recommended to publish them and make them available in written form in a prominent place, also printed and handed out to candidates (and/or sent in electronic form); specific apps are more and more popular and can be introduced to make the process go smoothly.

Examination CC staff will normally use lists with personal and contact details of the candidates, but examiners may identify candidates by their identification numbers (these IDs may be displayed on candidates' Hi-Viz vests or badges).

Examiners should comply with the requirements written in the ETT Exam Rules and Regulations, currently representing diverse stakeholders:

- The recognised and responsible training centre or certification centre;
- The private tree contracting industry;
- The public tree management services.

The examination schedule is set by the CC according to the number of candidates, organisational possibilities, and costs. Usually, for a given candidate, the examination is spread over two days: in one part written - conducted in a group, and in the other part in the field and oral - conducted individually.

3.5.3. THE CONTENT OF THE EXAM

Defining the Objectives and Structure of the Exam

In general, the content of the exam should cover all the competencies indicated in the ETT Curriculum and the goals and topics of the EAC ETT Exam

Rules and Regulations. Setting these will identify the key areas to focus on when developing questions. In addition, it makes it easier for both candidates and examiners to orient themselves in the content of the exam. When defining the objectives and structure, it is highly recommended to use the ETT Curriculum and Exam Matrix of competencies as references.

Organising the questions in a logical order and structure is important for ensuring the clarity of the exam. We list sections such as basic tree knowledge, tree disease diagnosis, arboricultural techniques, tree inventory and assessment, tree planning and management, etc. The sections reflect the ETT Curriculum (as described in the Exam Matrix), and each section is assigned a number of points corresponding to the weight of the section.

The final scores must allow, in accordance with the ETT Exam rules, for the number of points obtained to be converted into a percentage. The content of the examination should be prepared in the language in which it will be conducted as well as in English for the EAC supervisor (usually international) to facilitate future use.

Preparation of the Content of the Examination

There are several parts to the exam, each designed to test a part of the competencies in selected areas; however, the exam as a whole is designed to test the candidate's knowledge and skills as outlined in the Curriculum. The EAC certification rules and regulations do not dictate only one specific way in which the exam should be conducted, thereby leaving the CC with a great deal of freedom within the formal, technical, and content framework set. A useful tool for preparing questions and tasks and checking how well they cover the Curriculum is the competence and exam question Matrix. Each of the questions or tasks from a particular part of the exam can be matrixed against particular competence area by checking the content in the Curriculum.

BACKGROUND METHODOLOGY

Potentially conflicting situations should be avoided, e.g., examining people who are friends or in another close relationship, or acting as an examiner when also a trainer in the subject.

In general, examiners should be people with relevant competence, both professional (covering the evaluated topic at a very good level) and personal. It is good practice to select examiners with a high level of knowledge and experience, including those with industry certifications at ETT level (or as recommended above). It is recommended to invite examiners who have a recognised position in the national arboricultural industry and whose role is confirmed by the national EAC member.

Good communication skills are especially necessary for the oral parts of the exam. Good examiner questions in the oral exam must be clear, linked to the topic, goal-oriented, and at the level required for the candidate's competencies. It is highly recommended to write down the questions not included in the ready-on exam sheets/ question bank. A good examiner respects all the parties involved in the exam, in particular the candidates, the supervisor, other examiners and examination staff. All notes and any critique of the exam process should be delivered first to the Head of Examination Board as soon as possible to prevent any improper actions. Examiners should be familiar with the local occupational standards and safe work legislation and interpret and make judgements on current working practices and technologies within the area of work. All should receive an appropriate introduction to the ETT programme.

It is highly advisable to familiarise examiners with the examination content in advance and to train them personally on site in the rules of the examination and in the use of mark sheets prepared and used for the exam. Teams of examiners should have common assumptions regarding the examination, and, if there are several teams, each should work in a comparable way (cf. conducting oral examinations). The team examining Part 2 candidates must visit the site in person and see the trees that are the subject of the examination task.

	Written test	Simulation 1 economics, law, social law	Simulation 2 tree inspection
1. THEORETICAL FOUNDATIONS OF TREE MANAGEMENT			
1.1 Function, structure, development, growth stages and physiological processes of trees			
1.1.1 Tree function and structure	1.1; 1.2; 1.3; 1.4; 1.5; 2.2; 2.3; 2.4;		
1.1.2 Tree Development and Growth Stages			
1.2 Environmental Factors - The Effects of Soil, Site Location, Ecology and Biodiversity on Growth and Development of Trees			
1.2.1 Soil Science	2.1; 2.3; 2.5;		
1.2.2 Site Selection			
1.2.3 Ecology and Biodiversity (Nature Conservation and Environmentally Friendly Practices)	3.2		
1.3 The social and monetary Value of Trees			
1.3.1 The Amenity and Monetary Value of Trees	7.1; 7.2		
1.3.2 The Social Value of Trees	7.1;		
1.4 Tree-Quality Assessment, Planting and Aftercare			
1.4.1. Plant Quality Assessment - Species and Nursery Stock Selection	3.1; 3.2; 3.3; 3.4; 9.1; 9.2;		
1.4.2. Tree and Shrub Planting and Aftercare	9.6;		
1.5 Diagnosis and Evaluation of Tree Damage			
1.5.1 Abiotic Agents	2.1; 2.3; 2.5		
1.5.2 Biotic Agents	4.1; 4.2; 4.3; 4.4; 4.5; 2.4;		
1.5.3 Visual Tree Assessment and Hazard Analysis	8.1; 8.2; 8.3; 8.4; 8.5;		
1.6 Tree Care and Remedial Operations	9.3; 9.5;		Resculus
2. PRACTICAL PROCEDURES IN TREE MAINTENANCE AND REMEDIAL MEASURES			
2.1 Work site safety and risk assessment when carrying out tree work	6.1; 6.2;		
2.2 Work Site Organisation	6.2;		
2.3 Tree care and remedial measures	9.3; 9.5;		
2.4 Selecting and applying appropriate tree care techniques and tools	1.3; 6.1; 6.2; 9.3;		
2.5 Supervision of practical tree work	6.1;		
3. LAW, ECONOMY AND SOCIAL STUDIES			
3.1 Performance description or specifications for tree maintenance and remedial tree work			
3.2 Calculations, offers and costing			
3.3 Completion and approval, invoicing and guarantee period			
3.3 Setting up of legal transactions and liability rights			
3.3.1 Setting up of legal transactions			
3.3.2 Liability			
3.5 Legal regulations for carrying out tree maintenance			
3.4.1 Civil Law regulations			Oral
3.4.2 Public Law and Traffic regulations			
3.4.3 Application of Industrial Law, Company Law, Labour Law and social legislation			
3.5 Professional organisations and Trade Unions at European and national levels			
4. REPORTING AND COMMUNICATION			
4.1 Communicate and Report			
4.2 Support the establishment of a Structured Tree Management	10.1; 10.2		
4.3 Give Advice in response to an advisory assignment			

Fig. 10. Example of Analysis of ETT Competencies and Examination Tasks
Source: Matrix file ETT Exam Wrocław by Wim Peeters (project material)

Figure 10 shows an example of checking the coverage of competencies in questions and tasks in a specific exam (pilot exam conducted in the ETT 2020 Erasmus+ project). The content of this exam can be found in the appendices. For Part 1 specific question numbers from the written exam are written in the matrix; for Parts 2 and 3 the competency bands covered in that part of the exam are marked in colour, with an indication of specific elements particularly relevant to the candidate's assessment - if any.

Formulating Questions for the Part 1 Written Examination

A guide to preparing the content of the exam can be found in a complementary document, the aligned ETT Exam Matrix. Some practical explanations and hints are gathered for the examination staff below.

When creating questions, it's a good idea to include a variety of question types to assess different aspects of candidates' knowledge and skills:

- Open-ended questions with different requirements for the comprehensiveness of the answers (according to the certification rules) are recommended. Multiple-choice questions can help assess knowledge of facts and definitions; however, as they are not suitable for the level of competency expected of an ETT, use questions that require short and specific answers.
- Open-ended questions may require more detailed descriptions or explanations and not only test knowledge but also the candidates' understanding of the topic and the ability to relate facts. They should, however, allow for concise, clear answers.
- Practical assignments or case studies can test the candidates' ability to apply knowledge in practice.

It is important that the questions are clear, understandable, and related to the requirements of the European Tree Technician profession (see ETT Curriculum) and the expected level

appropriate to an ETT (see the BACKGROUND METHODOLOGY in Chapter 2.3).

The point value of particular question should firstly reflect the degree of its difficulty and, secondly, the importance of the issue addressed. More difficult questions, worth several points, should be formulated in such a way that it is easy to evaluate a partial answer. For example, "List two methods ... (2 points) and discuss the use of one of them for ... (2 points)."

It is important to generate more questions than necessary for one exam, which can then be recombined for future exams. In subsequent exam versions, it is recommended to change the order of the questions. The quality of the questions should be verified when exams are checked for comprehensibility. A high rate of missed /non answered questions, especially from people who generally did well with other answers, may indicate unclear wording of a questions.

Preparing the Answer Key

Preparing a detailed answer key ensures clear assessment criteria and simplifies the task of the examiners who did not participate in formulating the questions. It is important to be certain that the key contains the expected content of correct answers and information that examiners will need to consider when evaluating candidates' answers. It may include sample answers, important points to consider, or a specific form of response that is expected.

Exam Testing

Before the candidates undertake the exam, a full check of the content is required. The exam board should trial the exam to see if the questions are clear and assessable. Checking with representatives of the industry is also recommended. Another step in the preparation of the exam is to present the questions to a professionals from outside the industry and ask them to verify the comprehensibility and logic of the questions. It is, of course, vitally important to ensure that the exam material is kept confidential during this process.

The examination proposal must be sent in accordance with the ETT Exam Rules and Regulations to the EAC Supervisor in due time before the exam. The use of the exam matrix is also necessary to evaluate the written test in the context of the whole exam and to check that all competences are covered.

Grading the Examination

The examiners shall check each test after completion of the exam. The scores for each question are recorded on a paper form with a pen and entered into a digital table (e.g., MS Excel), where they are calculated. The summary scores for each examiner (and if there are more examiners – also the final grade e.g., average) are written on the exam sheets. The final score is accepted, and the report signed by all examiners.

The test is verified by a third examiner if there are uncertainties, such as:

- One examiner's grade is above, and the other's is below the passing score.
- The final score differs a little (e.g., by 3% or less – the level of the shift should be established by the exam board) from the passing score in any direction.

In these cases the final score shall be the result of further discussion (calibrated by a detailed discussion amongst the examiners involved). Otherwise, it is recommended to take the average of the three grades.

3.5.4. TOOLS

Tools, aids, and equipment should be considered and prepared in advance for written examinations and for field examinations. Additional aids for oral exams may also be required, e.g., maps, images, or data printouts from the tree assessment tools. The following field tools for tree assessment should be delivered on site to the candidates:

- tools for a tree inventory (certified measuring tapes, hypsometer/ laser height measurement tools, and diameter gauges);
- tools for a basic tree inspection (hammer, probe, and binoculars);

- tools for a basic soil assessment (shovel, auger, penetrometer, Egner stick, pH meter sampling containers, and sieve); and
- tools for basic cleaning – hands and tools (also disinfection).

3.5.5. CONDUCTING THE WRITTEN PARTS OF THE EXAM – BOTH PART 1 AND PART 3

- Prepare a room for the exam large enough so that the candidates do not distract each other and that possible communication between them is minimised (preferably by sitting them at separate tables).
- Make sure the examiner on duty/ invigilator during the exam is able to easily observe all the participants.
- Candidates may not use any aids or communication tools of their own.
- A big clock (or two) on the wall visible to candidates is a simple but useful tool.
- Bottles of water, clean paper tissues, and first aid kits are usually available on site.
- Pens, pencils, and clean writing paper are also available for candidates.

The written parts of the exam can be handwritten or completed on a computer unless indicated in the official exam rules or in the CC requirements. In order to test digital/ computer skills, it is advisable that at least one written exam is taken in digital format, e.g., Management Exercises in Economy, Law and Social Studies.

As usual in other exams, if the handwritten format is chosen for a particular part of the exam, clean paper and a pen should be made available to the candidate. If a digital exam format is chosen, computers/ laptops with appropriate software (usually MS Office – Word, Excel, Notepad) should be provided by the organisers and no open access to the internet should be available. Computers should be checked, plugged in, a mouse/ keyboard should be provided, and time should be allowed to familiarise the user with the device (5 to 10 minutes before the start of the exam). Minor

adaptations of the device for the candidate, e.g., changing the keyboard version, are acceptable (considering there may be candidates from other countries) with help or supervision from the exam staff. The time needed for exam adaptations should be included in the schedule. It is recommended to check with foreign candidates which keyboard style they use and prepare in advance.

In both formats, paper and digital, a representative of the examiners (either the invigilator or an assistant) will tell the candidates how to answer the questions, how to sign the documents, and how to submit them over to the examiner/invigilator. Adaptations can be arranged for candidates (like a change in the mode of answering) if prior notice is given of particular needs.

Due to the content of the questions, calculators may be useful, in which case they should be provided in sufficient numbers in the room.

Examples of good practices for the written exam:

- Candidates reporting to the room at least 15 minutes before the start of the exam and taking their places.
- A quiet room, marked with a notice, e.g., "Examination Do Not Disturb".
- The rules of exam announced and explained (be prepared for questions from candidates) at least 5 minutes before the start.
- The answer sheets/ memory sticks prepared in advance in a convenient format (optionally with anonymous identification, e.g., a random number assigned by a member of staff who is not an examiner).
- At least one member of the certification team must always be present in the room during the exam.
- At 50% completion of the exam time, 75% completion of the exam time, as well as 15 and 5 minutes before the end, the examinees should be informed of the remaining amount of time.
- When the time has run out, the examiner reminds the candidates to check if the exams are properly marked (by name or

unique number) and collects them.

- The answers given on the computer as marked with the candidate's name or unique number are collected on individual memory sticks, and the answers are, preferably, printed. The candidates are asked to sign (by unique code/ initial/ name) the paper answers/ printed from the digital file – on each page.
- A photocopy of the collected and initialled answers is made, and the originals are kept for the archives or for the candidates to see. The examiners' marks should be written on the copies.
- The collected answers are kept in a safe place (e.g., they are put into an envelope or a box that is subsequently sealed).

3.5.6. CONDUCTING THE EXAM PART 2. MANAGEMENT EXERCISE IN TREE INSPECTION

The idea behind this part of the examination is to test the candidate's knowledge and skills in assessing a tree in the field, preferably in the context of challenges that may be associated with the site, e.g., a new development or plans for changing the function of the site. The answers given in this section of the exam are given orally. The task must include an individual tree assessment in the field indicated by the CC. The fieldwork usually involves the use of tools and equipment provided by the CC, and the content of the task is prepared in written form (to be sure, always refer to current ETT Exam Rules and Regulations). The candidate is accompanied by the examiners or an assistant (in which case this part of the examination takes place elsewhere), whose task is to explain the task and supervise the candidate. If it is a public area, the assistant may need to explain that an exam is taking place to passers-by.

Examples of Good Practices for the Field Test

- The area with the tree(s) is safe and close to the site of the oral examination. It has also been checked before the examination for

accessibility and compatibility with the task (e.g., whether the tree to be assessed is still growing and accessible).

- The tree assessment tools and equipment are in working order and available on site (each tool x2) according to the list as per Section 3.5.4.
- The task for the candidates is printed legibly, and a pad, clean paper for notes, pen/pencil are available.
- A toilet is accessible nearby.
- The candidates, assistants, and examiners are wearing Hi-Viz vests of different colours.
- Communication between candidates is controlled and prohibited during all parts of the exam.
- Communication between the examiners and other exam board/CC staff is possible during the exam.

Evaluation of Responses

An evaluation sheet with fixed scores prepared in advance and understood by the examiners can be required and usually is prepared beforehand. Examiners make notes on the sheet documenting the questions asked, comments, and marks. Consideration may be given to recording the oral part for documentation in case of future disputes. This may be an audio or video recording. However, it is necessary to obtain the written consent of the candidate and the examiners. It would also need to be established how the recordings will be recorded, stored, and destroyed (GDPR regulations apply).

3.5.7. CONDUCTING THE EXAM PART 3. MANAGEMENT EXERCISE IN ECONOMY, LAW AND SOCIAL STUDIES

The idea behind this part of the examination is to test the candidate's knowledge and ability to analyse a task/query and prepare a quotation/plan of approach which takes into account calculations and regulations. It is good practice to conduct this part of the examination digitally on computers provided by the CC using office-type

software (for writing and calculating). Access to the internet should be unavailable. A blank document on a memory stick can be provided as a sample document. The examiner's representative (as an assistant or invigilator) will advise on how to answer questions, how to sign the documents, and how to submit them after the exam is finished. General technical guidance and good practice for the implementation of the written part of the examination can be applied as in Section 3.5.5.

If the answers from the written part are to be the basis for the oral part of the Part 3 examination, it is necessary to check them in advance, which requires examiners to work in the days before the oral examination. With a large number of candidates, this may mean that the oral part of the examination needs to be separated from the written part (a break of several days), which is currently used in some CCs. When there is a break between the written and oral parts, it is advisable to allow the candidate to recall the answers previously given in the written part. To this end, before the oral examination, the candidate can be given access to his or her original work or answers previously kept in the archives (filed as a printout of the paper) and be allowed to read it again before answering the oral part of the exam (allow approximately 15-20 minutes for the candidates to reacquaint themselves). The original printout given to the candidate remains with the examination board after the oral examination.

4. HOW TO PREPARE AND CONDUCT ETT TRAINING BEFORE CERTIFICATION

Training courses, workshops, or other forms of training for candidates for the European Tree Technician certification exam are not regulated by the EAC. Candidate training is often provided by certification centres running ETT EAC examinations, but can also be provided by other training institutions not running certification examinations.



4.1. GENERAL RULES AND TEACHING METHODOLOGY ISSUES IN LIFELONG LEARNING: WHAT IS GOOD TO KNOW

Courses for future ETTs will often be delivered in a continuing education (LLL) format for adults (AL) working full-time. The training centre and the trainers themselves should take this into account when planning and delivering training, so

basic information and guidance to help trainers and training managers is summarised below. It is good to remember that already-certified ETTs can also be a target for LLL due to recertification process requirements.

BACKGROUND METHODOLOGY

According to the European Union Lifelong Learning (LLL) encompasses all learning activities undertaken throughout life with the aim of improving knowledge, skills, and competencies, within personal, civic, social, or employment-related perspectives. The intention or aim to learn is the critical point that distinguishes these activities from non-learning activities, such as cultural or sporting activities. Adult learning (AL) means the participation of adults in lifelong learning. Adult learning usually refers to learning activities after the end of initial education and is a vital component of the EU's lifelong learning policy.⁴

⁴ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Lifelong_learning_\(LLL\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Lifelong_learning_(LLL))

The motives for LLL can be varied and include:

- developing one's career;
- personal development, realisation of ambitions, passions or intentions not realised at school;
- responding to the expectations of others, e.g., bosses, colleagues, subordinates, customers, or family;
- general values – civilisation, cultural, or social – connected with development and changes.

There are quite a few barriers for participants to participate in LLL, such as work and family/household responsibilities, which in older age can be compounded by health problems or other limitations. One encounters cognitive barriers related to reduced learning and memory abilities, clashes of new content with already established knowledge and habits, and a strong expectation of practical content ready for professional use. However, LLL participants, due to their age and experience,

might be more motivated to learn, responsible for their own development, independent in their learning, and better organised.

LLL is delivered in a variety of educational forms. If there are no other guidelines in a given country, ETT training can be delivered in each of the following forms, according to the training centre⁵:

- Continuing education in school forms, e.g.: adult schools, continuing education centres, practical training centres, and vocational training centres.
- Continuing education in non-school forms, e.g.: vocational, qualification, and hobby training and courses, postgraduate studies, conferences, seminars, and e-learning.

Training for ETT certification can be provided in formal and non-formal ways. An ETT education centre can also support candidates in informal

⁵ In Poland, for example, there are regulations relating to compulsory schooling for those under 18 years of age; for those over 18 years of age, any form of education is possible. In a given country, there may be local regulations concerning forms of education in a given industry. <http://www.irp-fundacja.pl/edukacja/vademecum.php>

learning by introducing, for example, pre-tests, additional publications for independent work, or access to training materials for self-study.⁶

- Formal education: education in an institutional system, the distinctive feature of which is a programme enabling the acquisition of a qualification recognised in a given legal system, usually in institutions recognised in a given educational system.
- Non-formal education: institutional and formalised education provided outside of programmes that enable the acquisition of qualifications recognised in a given legal system (typical examples are training based on the experience of companies, corporations, and social organisations). Non-formal education can be included in the system of recognition of qualifications or external qualification examinations.
- Informal learning: intentional learning, i.e., self-directed learning, or unintentional learning that occurs unknowingly in everyday situations, including experiences at work or in one's private life.

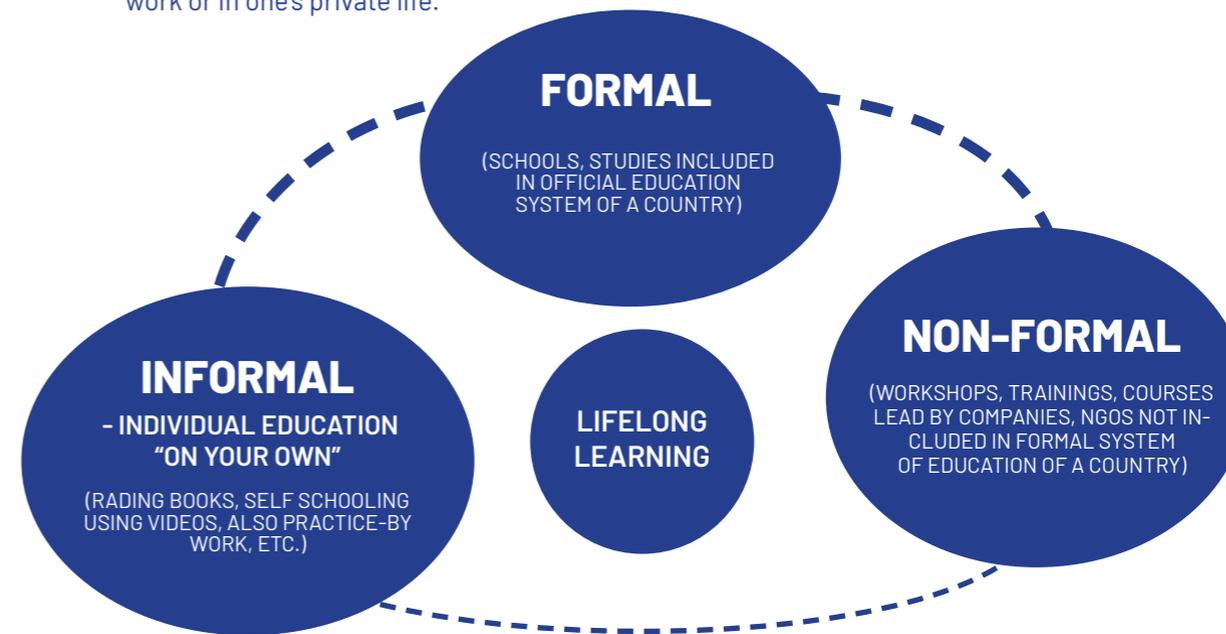
Until the COVID-19 pandemic, arboriculture courses were mainly delivered onsite. Since 2020, distance learning, delivered remotely or in blended learning programmes (a blended system/combining online and stationary classes), has also been developing strongly in this industry.⁷

Successful e-learning and blended learning requires a number of basic conditions, but they can test digital competencies and enhance ETT skills. The learner should have:

- easy access to a computer and an internet connection with good data transmission;
- computer skills and be proficient in the use of software;
- "familiarity" with digital forms of education (e.g., webinars, tutorials, virtual classroom).

Fig. 11. Forms of continuing education possible in ETT training

Source: own elaboration



⁶ An interesting example are the results of arboricultural projects in which self-education materials useful also for ETT candidates have been prepared - <https://vetree.eu> or <http://tree-assessor.dobrekadry.pl/>.

⁷ Some universities are still working in blended learning, e.g. delivering lectures in this way. One project partner is running a course for tree assessors in this way.

A training centre for ETTs in many countries will, typically, be held in a non-formal setting, which is the most common training model in countries where ETT certification is carried out (cf. the EAC website). However, it is possible to prepare for certification in a school or higher education setting as part of courses or as a dedicated section of classes.

4.2. TRAINER COMPETENCIES AND QUALIFICATIONS

In the arboriculture industry, especially in non-formal education, trainers often do not have a pedagogical background, relying on general abilities, intuition, or experience. It is advisable that they have undergone methodological training, if only in the form of self-study.

Good trainers have a body of knowledge, professional experience related to the training topic, and practice in teaching others. They are usually expected to be well-organised and multi-task skilled, but also possess qualities such as:

- good communication skills, which include effective explanation of the training topics;
- openness and ability to cooperate with others;
- a good balance between goal vs. process orientation;
- openness to solving problems and novelties;
- creativity;
- flexibility⁸; and
- ability to lead discussions.

Regarding professional skills and knowledge of the course content, several other attributes can be expected of the trainers:

- be occupationally competent and capable of carrying out the job covered by the training topic according to current industry standards and practices;
- have up-to-date experience in appropriate aspects of the topic (preferably both educational and practical);
- actively engage in relevant, industry-specific, continuous professional development activities and keep up-to-date with developments in arboriculture;
- have good knowledge of the safe working requirements in the industry; and
- have had an appropriate induction to the ETT Curriculum, exam rules, and other relevant topics important for training.

For specific requirements for a given instructor (or school) to teach the ETT syllabus, it is recommended that each school undertake an evaluation of the skills of their instructors to define possible further training needs of their staff.

content and schedule of the proposed training, it is important to make sure that all the topics that fall within the ETT competencies are covered in the training in a way that is comprehensive and corresponds to the ETT's level of knowledge in both theoretical and practical terms. So, it is best to divide the content of the training into segments corresponding to the individual competency areas (see the ETT Study Guide for detailed content):

- Theoretical Aspects of Tree management
- Practical Procedures in Tree Management
- Law and Economy
- Reporting and Communication

As part of the training, candidates should become familiar with the general assessment criteria used in the certification examination and also be aware of the importance of the individual topics being certified (cf. especially the ETT exam Rules and Regulations).

4.3.1. STUDENTS VS CERTIFICATION CANDIDATES - WHAT IS IMPORTANT TO CHECK

A trainee does not have to fulfil all the conditions that apply to ETT certification candidates, but it is worth checking them to avoid the possibility of the candidate not being allowed to take the exam. For this reason, it is worthwhile for training candidates to fill out the form containing the conditions for ETT certification and to check whether they fulfil them sufficiently by the time of the exam.

It is worth noting that the two main routes to entry for candidates applying for ETT certification (ETW vs. other certificates or diplomas) are related to the different ways of acquiring knowledge and other work experience. ETWs work usually as contractors or contractor's employee, a career with no prerequisite of a certain level of education, which means that these people usually work in the field and less frequently with computers, papers and numbers. They also have very differentiated levels of theoretical competence. Other certificates that are related to forestry, horticulture, landscape architecture education, or certificates in tree assess-

8. <https://simplifytraining.com/conduct-effective-training-session/>

BACKGROUND METHODOLOGY

An interesting teaching methodology is Simulation Pedagogy which consists of experiential learning imitating reality, e.g., future work tasks. As the ETT certification exam is partly made up of tasks that are simulations of ETT work (parts 2 and 3 of the exam are even colloquially referred to in some CCs as Simulation 1 and Simulation 2), this method seems well suited to the needs of courses and training for ETT candidates.⁹ It is often combined with problem solving, the use of computer-based tools, Virtual Reality (VR), in parallel with the actual tools used for the job. The advantage of this approach is that future work tasks can be practised in close-to-real-life conditions. This method can also be - and is currently - used as a simulation exercise of the exam itself.

9. You can read more about simulation pedagogy and its application in adult education in available studies e.g. <https://collaborate.uw.edu/course/sim-102-pedagogical-approaches-in-simulation-for-developing-critical-thinking/> or Arola T (2020) Simulation pedagogy in teaching modern technologies, Dobre Kadry, Wrocław.

4.3. HOW TO PREPARE AND CONDUCT TRAINING

The preparation for ETT certification in the form of a course or training should be a complete and thorough process which reflects the reality and scope of the issues being examined and, due to the specificities of the country in which the certification takes place, should be adapted to local (national) legislation and environmental conditions. This is particularly important as the candidates taking the certification are mostly from, or work in, the country where the examination is taking place and are mostly familiar with the realities of working in that area.

An important aspect of the course delivery is the clear and readable division of the training content according to the content of the ETT Curriculum (see Chapter 3). When preparing the

ment or supervision of work can be held by professionals with a university degree working more with computers and with a more theoretical background.

4.3.2. INTRODUCTION TEST TO CHECK THE COMPETENCY GAPS

Before ETT training, a test of previous knowledge and skills is recommended in areas which are necessary or useful in ETT work, including:

- knowledge of biology, including the basics of botany and zoology, and biological terminology, especially tree related;
- knowledge of basic mathematics;
- use of measuring instruments used in basic tree assessments;
- knowledge of dendrology and tree identification – ability to identify common species of trees and shrubs growing in a given country, both native and non-native;
- reading and writing skills in the training language;
- computer skills and basic editing software as well as knowledge of the Internet;
- an understanding of foreign languages is advantageous;
- knowledge of tools and techniques used in digital photography and editing performed with the help of popular graphics or editing software;
- ability to read and use traditional and digital maps as well as GPS systems; and
- knowledge and skills in:
 - rules and regulations of occupational health and safety, fire prevention, and ergonomics,
 - rules for securing the area and preparing information for specialist services,
 - rules of premedical first aid,
 - rules for using electro-technical tools and equipment, and
 - biosecurity rules.

The test can be done as a self-conducted introduction test based on the Study Guide chapters or as a special test prepared in traditional (PAPI)

or electronic (online) form by the training centre. Meeting the expected minimum of competencies can be a pre-requisite for trainees.

4.3.3. EQUIPMENT AND FACILITY FOR INDOOR/OUTDOOR WORKSHOPS

A training centre providing training for ETT certification should be equipped with the tools and equipment necessary for complete ETT training:

Theoretical classes:

- lecture/training room,
- multimedia equipment (projector, TV),
- laser pointer,
- computer/laptop,
- whiteboard, flipchart,
- magnifying glass, binocular, microscope,
- notebooks.

Practical activities:

- tools for tree inventory (certified measuring tapes, hypsometer/laser height measurement tools, diameter gauges),
- tools for basic tree inspection (hammer, probe, binoculars),
- tools for habitat assessment and verification (endoscope, torches),
- tools for basic soil assessment (shovels/spades, sampling containers, granulometer, Egner stick, sieve, pH meter, tensiometer, penetrometer, auger),
- GPS,
- field laser pointer,
- video recording equipment (telephone, camera),
- high-visibility vests, safety helmets,
- instrumental diagnostic equipment with software (resistance drill, sonic tomograph, electric tomograph, root detectors, pulling test, etc.),
- appropriate sites with trees and a site(s) for training close to the facility (up to 10 minutes walking distance is recommended).

In both the facility and the field site, the applicable rules of safe work for trainers and students should be followed.

4.3.4. ETT TRAINING PROPOSAL IN SHORT AND LONG VERSIONS

In different training centres in Europe, one can find different options of training offered to ETT candidates.

Short versions are designed to cover the main areas of the ETT exam and prepare candidates for the exam only. In long versions, the whole course is covered as well as more general theoretical topics, e.g., tree species identification or tree biology.

EXAMPLES OF SHORT AND LONG VERSIONS OF ETT TRAINING (based on real programmes)

Short version – in total ca 90 hours

- 6 days: general tree care (tree biology, properties of soil, plant protection, pruning, planting, tree inspections, assessment & examination, tree protection, crown stabilisation)
- 4 days: law and regulations (civil law, liability rights, procurement law, legal transactions, company and labour law, contract law)
- 2 days: economy (cost calculations, accounting, controlling, tenders)
- 3 days of review and exam preparation

Long version – in total ca 210 hours

- Recognising tree species in a leafy and leafless state
- Morphology and basics of biomechanics
- Physiology of woody plants
- Species selection and habitat
- Principles for carrying out inventories
- Rules and methods for the preparation of stand management recommendations and projects, as well as tree care operations and plans
- Tree care problems in various field situations
- Legal aspects of ETT activities
- Organisation of work in green areas
- Tree work – guidance and supervision
- Principles of felling trees from the ground and in sections
- Soil, substrate, structural substrates, substitute foundations
- Planting trees and shrubs
- Trees and safety
- Diagnosis of trees in the field
- Fungi, diseases, and pests
- Protected organisms
- Technical and tender documents, terms and conditions, and elements of public procurement law
- Principles of tree protection on construction sites
- Work estimates and pricing

4.3.5. PROPOSAL OF TRAINING BASED ON TEST EXAM TRAINING

Module: TREE MANAGEMENT

Tree management training, due to the nature of the subject, is a complex and multi-staged process. The multiplicity of issues and the different experiences of the candidates can make it challenging to teach.

The training should take the form of both theoretical lectures combined with written exercises (work plans, costing, etc.) and practical field exercises (field inspections). If possible, as much of what is covered in the theoretical sessions should be supplemented with practical field work.

THEORETICAL PART

The theoretical part of the training should take the form of a lecture supplemented by a visual presentation and by exercises and tasks on the subject. An important part of this is the formulation of tasks which will be geared to the individual work of each candidate. Another important element is to guide the candidate through the tree management process step by step, including a special emphasis on the reporting process (see also Chapter 4 of the ETT Study Guide developed in the project).

As with the practical part, proposed tasks should, if possible, be based on actual situations and examples (e.g., costing should be based on the geographical constraints of the given place). Working with real-life examples better reflects the reality of the ETT's future work and places limits on overly extensive and unrealistic recommendations.

The theoretical part could familiarise candidates with:

- national legislation related to the work of the ETT;
- reading and understanding the tender documentation and its annexes (e.g., the technical specifications of the contract, the OPD, and the legislation in this area);

- preparation of bills of quantities and cost estimates;
- rules for formulating recommendations and care plans;
- preparation of field documentation;
- the theoretical basics of tree care (organising work, tree work, planting trees, securing trees on construction sites);
- selection of species according to habitat criteria; and
- the formulation of a structured and transparent report.

PRACTICAL PART

Within the framework of the fieldwork, the proposed tasks should be formulated in such a way that it is possible to test the knowledge and competence of each candidate. It is, therefore, important that although the tasks are designed to be solved in a group, they are also geared towards individual work.

During the practical training, the knowledge acquired during the theoretical part should be supplemented, with a special emphasis being placed on:

- the practical basics of tree care (organisation of work, tree work, planting, securing the tree on construction sites);
- field inspection (collection of field data, including soil survey and root zone identification);
- the identification of protected habitats and species; and
- practical knowledge of the use of the tools used in ETT work.

As part of the field part of the training, it is important to conduct a case study (simulation), representing, as accurately as possible, a problem and a tree management situation that the trainees will encounter in their future ETT work. The simulations developed as part of the training should be based (if possible) on actual events and their solutions, present the whole path of the procedure, and give opportunities to construct new,

realistic recommendations and solutions. It is very important that, as part of the task, the trainees are able to find out the actual solution to the problem raised in the simulation, as well as have the opportunity to offer their own suggestions. At this stage, it is essential to have clear and lucid communication with the trainers, who will be able to explain in a factual manner whether the proposed solutions are acceptable and will be able to lead the group discussion. Graded cases from the past can be good material for students and discussion.

The field visit should be conducted according to a pre-prepared plan describing step-by-step exactly which elements of the environment should be verified and how to make an assessment in the field.

It is a good idea to prepare a form to guide trainees through the process of the field visit. The form should include information necessary to prepare a full work plan for stand management, such as the following:

- an assessment of the surroundings (land use, type of land, and its value in social, natural, historical, or aesthetic terms);
- a detailed description of the infrastructure of the site (buildings, above- and below-ground installations, landscaping);
- a description of natural values (the presence of habitats of protected species, protected areas, and other elements of natural value);
- a habitat assessment (soil assessment, natural neighbourhood);
- an evaluation of the existing stand (dendrometric measurements, general assessment of group or individual trees, tree inspection, valuation);
- a risk assessment (safety of the environment, the general public and work procedures); and
- preliminary recommendations.

An important part of the field training is to familiarise the trainees with the basic tools and equipment used in ETT work and to ensure that

each trainee in the class is trained in their practical use in the field. The instructor should carefully instruct the use of the tools and equipment and then individually verify their correct use by each candidate.

MODULE ASSESSMENT CRITERIA:

- a. Description and assessment of the current scenario,
- b. Correct identification of stakeholders,
- c. Communication with stakeholders (form and means of communication),
- d. Correct identification of the problem,
- e. Feasibility of planned activities (work organisation, proposed tree works),
- f. Pricing (working time and monetary value),
- g. Relevance of contractor selection criteria,
- h. Consideration of climate and ecosystem criteria,
- i. Correct structure and readability of the report.

Module: TREE ASSESSMENT

A separate element to be assessed in the ETT certification is the ability to carry out a tree inspection. The inspection can be of a single tree or a group of trees. It is important to note that performing tree inspections can be both part of a tree management task as well as a separate task that an ETT candidate may encounter in their future activities. Correctly carrying out inspections and making recommendations are crucial in tree management.

THEORETICAL PART

It is recommended that this part of the training be carried out in the form of lectures supported by a multimedia presentation, the presentation of samples or artefacts (e.g., fruiting bodies of tree fungi, soil samples, etc.), inspection tools, and individual or group work exercises. The topics should be applicable, realistic, specific (concrete), and linked to the life experience of the candidates.

As part of the theoretical part, candidates can be familiarised with the following topics:

- Basic biology, biomechanics, and the physiology of trees
- Recognition of diagnostic features and their evaluation
- Species characterisation of trees for diagnostic features
- Characteristics of trees in terms of their development stage
- Identifying threats to trees
- Analysis of the environment (usage, values, growth conditions)
- Habitats and protected species associated with trees
- Risk management around trees
- Overview of instrumental methods for tree diagnosis
- Preparation of documentation in tree evaluation

PRACTICAL PART

The practical part of the tree inspection training can be mainly oriented towards the individual work of the candidates and a discussion moderated by the trainer.

After the practical part of the training, the candidate should be prepared to carry out an independent and complete tree inspection and produce a detailed report. The range of topics that the candidate should learn about during the field-work is as follows:

- taking stock of the trees (use of inventory tools: tape, hypsometer/laser height measurement tools);
- the practical use of tools used in tree assessments (hammer, arborist probe, binoculars);
- the identification of diagnostic features with respect to development phase and tree species;
- practical assessments of the environment with regard to use and growth conditions;
- risk and hazard assessments;

- habitat inspections for protected species on the tree;
- the correct preparation of field documentation; and
- application of advanced tree inspection methods (instrumental diagnosis, aerial inspection, soil assessment).

As with the module on tree management during the tree inspection practicals, particular emphasis should be placed on teaching candidates to use the tree inspection tools skillfully. The instructor should carefully instruct the use of the tools and then individually verify each candidate's correct use of them.

As part of the field training, candidates should acquire the ability to realistically assess trees and possible threats. A simplified and detailed tree assessment form will help with this part of the training.

MODULE ASSESSMENT CRITERIA:

- Correct assessment of the surroundings (including correctly identified land use, natural-historical-cultural, social, and aesthetic values),
- Correct identification of species,
- Correct tree measurements,
- Correct assessment of diagnostic features,
- Assessment of tool handling,
- Realistic risk assessment,
- Making recommendations.

Table 1. Suggestions for ETT training topics.

THEME	SCOPE	FORM
TREE MANAGEMENT		
Who is the ETT?	Terms of reference and profile of the ETT	Theoretical classes
Laws that apply to the Work of an ETT	Familiarise candidates with national and European legislation relating to the work of ETTs	Theoretical classes
Administrative Processes	Reading and understanding the tender documentation and its annexes (technical specifications, terms of reference)	Theoretical classes
Costing	Preparation of bills of quantities for works and cost estimates based on contract specifications and site visits	Theoretical classes
Valuation of Trees	Carry out valuations of trees in terms of monetary, nature compensation and ecosystem services	Theoretical classes
Field Documentation	Form preparation Data collection in the field	Theoretical classes Field activities
Basics of Tree Care	Tree work (equipment, methods) Tree planting (methods, species selection) Trees on building site (protection, supervision, monitoring during building process)	Theoretical classes Field activities
Environmental Conditions	Soil assessment Habitat, ecological and biological conditions Assessment of the environment	Theoretical classes Field activities
Tools in Tree Management	Use of tree management tools	Theoretical classes Field activities
Reporting	Step-by-step report generation, document generation structure	Theoretical classes

THEME	SCOPE	FORM
Recommendations and Planning	Creation of care plans	Theoretical classes Field activities
Risk Assessment	Risk and hazard assessment around the tree and risk assessment when carrying out the work	Theoretical classes Field activities
Communication and Marketing	Communication plan Communication methods	Theoretical classes
TREE ASSESSMENT		
Biology, Biomechanics and the Physiology of Trees	Basics in tree biology, ecology and biomechanics	Theoretical classes
Diagnostic Characteristics of Trees with respect to Species Specificity and Developmental Stage	Discussion of the most important diagnostic traits (stability, condition, vitality and others) with special emphasis on species specificity and the developmental stage of the tree (youth, maturity, old age and intermediate stages)	Theoretical classes Field activities
Arboreal Fungi	Recognition of the most common arboreal fungi in the exam area with a discussion on their impact on tree stability and possible threats	Theoretical classes Field activities
Risk Assessment in Tree Inspections	Risk assessment around the tree	Theoretical classes Field activities
Neighbourhood Assessment in Tree Inspections	Inspection of the environment and its influence on the growth and condition of the tree	Theoretical classes Field activities
Use of Tools in Tree Evaluation	Practical use of basic tools in tree assessment (hammer, probe)	Theoretical classes Field activities
Preparation of Documentation in Tree Evaluation	Preparation of tree evaluation form, and preparation of final report	Theoretical classes
Biodiversity and Habitats within Trees	Verification of protected species habitats within the tree	Theoretical classes Field activities

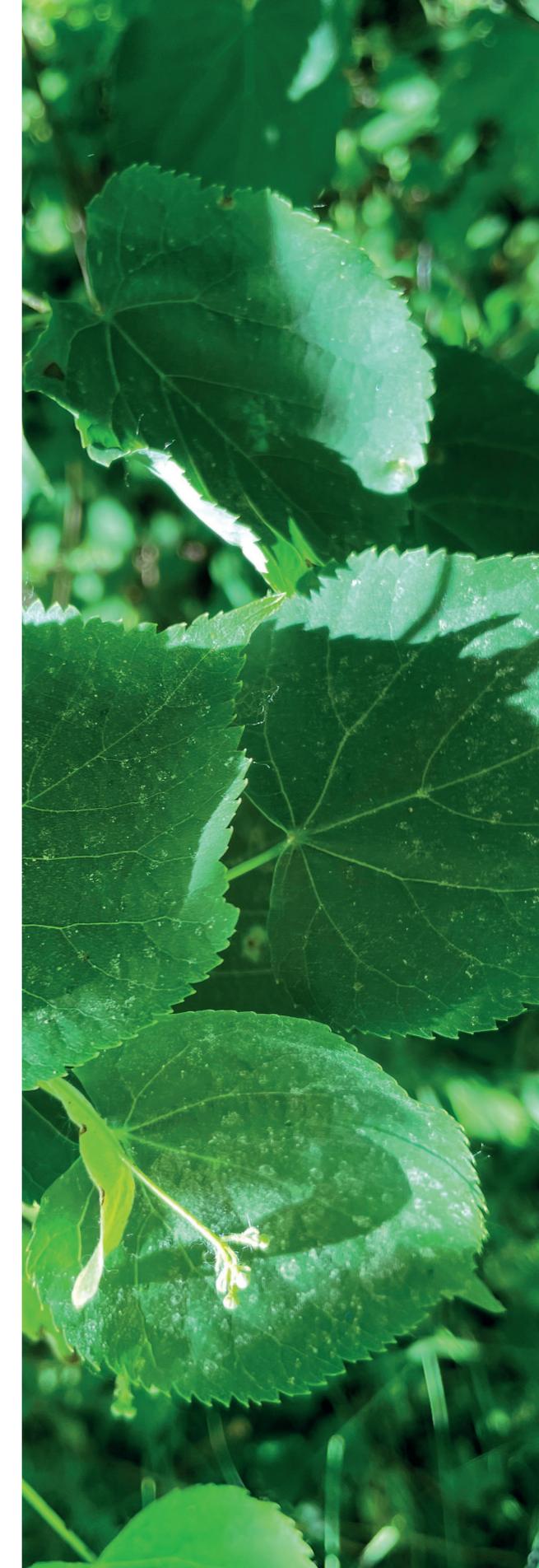
4.4. THE ETT STUDY GUIDE AS AN AID FOR TRAINING

The ETT Study Guide developed in the project helps candidates, trainers, and examiners to know what the scope of the Curriculum is. It acts as a compass, which gives direction to the essence of the subjects. This helps to distinguish what is essential for candidates to focus on. Further, the themes in each chapter help to process the abundant information available on the web and in literature. The themes are crafted by specialists with decades of experience. After each chapter, essential reading books and documents are listed together with additional reading information. The Study Guide is not a replacement for the study material of the training centre, but it gives guidance to help study efficiently.

The publication developed by the ETT 2020 Erasmus+ Project team contains 4 chapters covering the relevant competency areas (see Chapter 2.3 above). In each topic, one can find theory, vocabulary, test questions and tasks, and a sources list.

4.5. EXAMPLES OF MATERIALS FOR TRAINING

There are several cases prepared for ETT training used and tested during the Erasmus+ project workshops that can be used as a benchmark for preparing simulations for practising skills. They can be found in Appendix E.





5. ETT UP-DATE TRAININGS

5.1. IDENTIFYING THE EDUCATIONAL NEEDS OF EXPERIENCED ADULTS

Arboriculture, like many 'young and developing' industries, is growing very rapidly. There are changes in many aspects of the industry, including knowledge, practices, technologies, regulations/ standards, ethics, and its public image. LLL is now a requirement for all professionals in every industry. Training centres should be prepared for further training. ETTs certified in the last 20 years can vary greatly in age, in their range of practice in the industry, and in the degree to which they have continued updating their competencies since certification. Based on the experiences in the project, we can make some guidelines for defining the learning needs of adults in LLL:

- Objective, resulting from changes in the industry:
 - Changes to the ETT Curriculum - new competencies not covered in training and certification in previous years, e.g., biodiversity, communication, and reporting,
 - New and developing topics in the country and in the sector, e.g., new tree diagnostic technologies, tree work techniques, new pruning techniques, and new regulations and standards at European or national level,
 - Competencies to be renewed, refreshed, or re-trained (e.g., first aid),

- Subjective, as perceived by students or verified by control tests:
 - Reported spontaneously in current courses by new candidates,
 - Questionnaires to check educational needs - with prompting of new topics/competency areas,
 - Competency tests in selected areas (e.g., based on questions from current certifications).

5.2. COMMUNICATION AND MOTIVATION OF POTENTIAL TRAINEES

The primary motive for current ETTs is mandatory ETT recertification for those wishing to retain the title awarded by the EAC.

Secondary motives for current ETTs are to supplement knowledge in topics mandatory for

new ETTs to learn, to confirm knowledge and skills, to demonstrate updated knowledge for clients, employers and colleagues, and to obtain certificates that show they have updated competencies in new areas.

- The following are suggestions for communication about continuing education related to ETT needs:
 - Inform the current ETTs of the recertification and its details,
 - Link it to information about training opportunities and their compliance with recertification requirements,
 - Provide confirmation by the national member of the EAC of the number of training hours accepted as delivered by specific training,
 - Confirm certification of the supplementary training,
 - Provide a clear and transparent linkage between the training and the new competencies of the ETT,
 - Provide different offers - variety of subject matter, time/length of training, price, access, and technology.
- Inform other stakeholders - especially customers - about the ETT recertification and the new competencies that are being introduced:
 - Demonstrate a selection of new training topics and their ad hoc certification as evidence of the acquisition of competencies recognised in the industry as an important addition to ETT's knowledge and skills,
 - Include other stakeholders as students in the training and adjust programmes accordingly.
- Use diverse media and channels in communication, as some older ETTs may prefer traditional media, e.g., trade journals.
- Cooperate with industry organisations and scientific bodies.

NOTE:

The training centre can prepare its own proposals based on necessary topics (MUST HAVE) for updating competencies, but it is good to be open to the needs of the audience (GOOD TO KNOW topics). It is good practice to follow topics emerging from European or national conferences and check whether the topic is relevant to ETT certification and can complement the competencies.

A test of a new topic for appropriateness can be a free/or low-cost trial webinar showcasing the topic, which acts as a promotion for the new competency area.

5.3. NEW COMPETENCIES AND STANDARDS: TRAINING TOPICS AND BENCHMARKS

In the tables below, there are different benchmark training courses which can be proposed by a training centre for ETTs.

The first table contains topics and areas connected with the extended ETT Curriculum and specific competency areas of an ETT. They are in groups connected with challenges discovered in the project survey and are recognised as areas of which current ETTs are likely to have less knowledge. Links to descriptions and literature are also included.

In the last decade, many new standards and arboricultural industry best practice publications have been released. The second table contains a list with outlined content and sources. Other national industry standards can be added by training centres.

CHALLENGES/ NEW COMPE- TENCES	KEYWORDS	AVAILABLE TRAINING	AVAILABLE CERTIFICATIONS/ QUALIFICATIONS	AVAILABLE LITERATURE AND STUDY MATERIAL	NOTES, COM- MENTS ETC
Biodiversity loss	Veteran tree management, micro habitat, ecosystems, overexploita- tion, extinction, urban wildlife	<p>Praktijk Centrum Bomen (NL) https://pcbomen.nl/veteraanbomen-beheer/</p> <p>Svenska Trädföreningen (SE) https://www.tradforeningen.org/certifiseringar/vetcert/</p> <p>Instytut Drzewa (PL) https://instytut-drzewa.pl/vetcert/</p> <p>Inverde (BE) https://www.inverde.be/opleidingen/het-beheer-van-veteraanbomen-0</p> <p>The Arboricultural Association (GB) https://www.trees.org.uk/Training-Events/VETcert</p> <p>Ancient Tree Forum (GB) https://www.ancienttreeforum.org.uk/</p>	<p>VETcert (EU) https://www.vetcert.eu/</p> <p>Instytut Drzewa (PL) https://instytut-drzewa.pl/vetcert/</p> <p>Sveriges arboristförbund (SE) https://sverigesarboristforbund.se/certifiseringar/</p> <p>Arboristica Akademie (CZ) https://arboristicaakademie.cz</p> <p>Instytut Drzewa (PL)https://instytut-drzewa.pl/vetcert/</p> <p>Inverde (BE) https://www.inverde.be/opleidingen/examen-vet-cert-uitvoerend-niveau</p> <p>The Arboricultural Association (GB) https://www.trees.org.uk/Training-Events/VETcert</p> <p>Asociación Española de Arboricultura (ES) https://aearboricultura.org/vetcert-especialista-en-arbolado-veterano/</p>	<p>www.vetcert.eu</p> <p>www.vetree.eu</p> <p>Trees – a lifespan approach. http://drzewa.org.pl/en/publikacja/trees-a-lifespan-approach-contributions-arboriculture-from-european-practitioners/</p>	
Climate change mitigation and adaptation	Ecosystem services, Anthropogenic global warming, Extreme weather, stormwater management	UNESCO climate change education	<p>https://www.unesco.org/en/climate-change/education</p> <p>https://climate.ec.europa.eu/eu-action/adaptation-climate-change/eu-adaptation-strategy_en</p>	<p>https://www.who.int/publications/i/item/SEA-EH-585</p> <p>Träd i urbana landskap (Henrik Sjöman) (SE) https://www.studentlitteratur.se/kurslitteratur/naturvetenskap-och-miljo/biologi/trad-i-urbana-landskap</p>	
Valuing trees (monetary)	Ecosystem services, amenity valuation, tree appraisal, sub- jective values			Several national stand- ards in Europe	EU standard in pro- gress (ECOST project)
Integration into urban infrastruc- tures /forestry	Urban forestry, iTree, ecosys- tem services, community forestry, urban green space, urban tree, city planning, urban heat island	i-Tree (US) https://www.itreetools.org/support/resources-overview/i-tree-workshops	Society of municipal arbo- rists (US) https://www.urban-forestry.com/certification-and-education	https://www.urbanforestry.be/	

CHALLENGES/ NEW COMPE- TENCES	KEYWORDS	AVAILABLE TRAINING	AVAILABLE CERTIFICATIONS/ QUALIFICATIONS	AVAILABLE LITERATURE AND STUDY MATERIAL	NOTES, COM- MENTS ETC
Consultancy/ Communica- tion	Communica- tion, liability, data manage- ment/ Public Relations	The Arboricultural Associ- ation (UK) https://www.trees.org.uk/Training-And-Events	Accreditation The Arboricul- tural Association (UK) https://www.trees.org.uk/Accreditation/Accreditations		EU Tree Assess- ment certifi- cation in progress (ECOST project)
Reporting	Data manage- ment	Instytut Drzewa (PL) https://instytut-drzewa.pl/certyfikowany-inspektor-drzew/			
Stakeholders		Svenska Trädföreningen (SE) https://www.tradforeningen.org/happening/rapportskrivande-grundkurs-2023/			
Importance of policy		Svenska Trädföreningen (SE) https://www.tradforeningen.org/happening/3-30-300/			
Data management	GIS, Drone inspections, device-assisted assessment		Drone license A1-A3	https://www.dronelicense.eu/ https://www.qgis.org/en/site/	
Biosecurity	Introduced tree species, introduced pests and diseases, inva- sive species, quarantine		VETcert (EU)	https://food.ec.europa.eu/plants/plant-health-and-biosecurity_en#eu-actions-for-plant-health	
Fungi and trees	Symbiosis, mycorrhiza, my- celium, endo- and ectomyc- orrhiza, decay, hollowing	Inverde (BE) https://www.inverde.be/opleidingen/ett-tweed-aagse-masterclass-mycological-tree-assessment	VETcert (EU)	Fungi and Trees (Lynne Boddy)(GB) Fungi on Trees (David Humphries)(GB)	
Tree architecture	Archi method, architectural models, reitera- tion, epicormic growth, decline, senescence, resilience, development stages, func- tional units, growth units, axe categories	Ancient Tree Forum (GB) https://www.ancienttreeforum.org.uk/		L'architecture des arbres des régions tempérées Jeanne Millet (CA) La taille des arbres d'ornement Christophe Drénou (FR) http://www.ancienttreeforum.co.uk/wp-content/uploads/2019/10/P44-49_FINAL.pdf	It's covered to a certain de- gree in the VETcert certifica- tion (EU)

PUBLICATION	YEAR	TOPIC	LANGUAGE	EU OR NATIONAL	LINK
EU					
VETcert standard practising level	2018	Veteran tree management standard for practitioners	ENG	EU	https://www.vetcert.eu/sites/default/files/2018-11/VETcert_Standard_Practising_May2018.pdf
VETcert standard consulting level	2018	Veteran tree management standard for consultants	ENG	EU	https://www.vetcert.eu/sites/default/files/2018-11/VETcert_Standard_Practising_May2018.pdf
European Tree Pruning Standard	2021	European tree pruning standard	ENG	EU	https://www.eac-arboriculture.com/eac-guides-and-european-arboricultural-standards.aspx http://www.europeanarboriculturalstandards.eu/
European Cabling and Bracing Standard	2022	European cabling and bracing standard	ENG	EU	https://www.eac-arboriculture.com/eac-guides-and-european-arboricultural-standards.aspx http://www.europeanarboriculturalstandards.eu/
European Tree Planting Standard	2022	European tree planting standard	ENG	EU	https://www.eac-arboriculture.com/eac-guides-and-european-arboricultural-standards.aspx http://www.europeanarboriculturalstandards.eu/
EAC's Code of Ethics	2021	The EAC's Code of Ethics gives general outlines of how arborists should behave, as well as specific guidance for handling issues like harassment, safety and conflicts of interest	ENG, LV, PL, RU, ES	EU	https://www.eac-arboriculture.com/eac-guides-and-european-arboricultural-standards.aspx
Aerial Tree Work Operations. A Guide to Safe Work Practice (Third Edition)	2002	Aerial tree work operations	DE, IT, LV, ES, RO	EU	https://www.eac-arboriculture.com/eac-guides-and-european-arboricultural-standards.aspx
DENMARK					
Erhvervsmæssig Træklatring	2017	Tree climbing industry best practice. Health and Safety Risk assessment	DK	DK	https://dansk-traeplejeforening.dk/sites/default/files/Branchevejledningen_JordtilBord.2017-1-ilovepdf-compressed.pdf

PUBLICATION	YEAR	TOPIC	LANGUAGE	EU OR NATIONAL	LINK
SWEDEN					
SS 990000:2020 Tree care – Terms and definitions	2020	Swedish Standard, Tree Care – Terms and definitions	SE, ENG	SE	https://www.tradforeningen.org/publikationer/sis-terminologistandard/
SS 990001-1:2020 Tree care –Processes and methods for tree pruning-Part 1: Requirements for clients	2020	Swedish Standard, Tree care – tree pruning	SE, ENG	SE	https://www.tradforeningen.org/publikationer/sis-terminologistandard/
SS 990001-2:2020 Tree care –Processes and methods for tree pruning-Part 1: Requirements for providers	2020	Swedish Standard, Tree care – tree pruning	SE, ENG	SE	https://www.tradforeningen.org/publikationer/sis-terminologistandard/
Alnarpsmodellen 2.1	2015	Tree evaluation	SE	SE	https://www.tradforeningen.org/publikationer/ekonomisk-vardering-av-trad/
POLAND					
SCIP 001:2021 The standard of tree pruning and care Standard cięcia i pielęgnacji drzew	2021	Tree pruning and tree care	PL/ENG	PL	http://drzewa.org.pl/standardy/ - PL http://drzewa.org.pl/en/knowledge/ - ENG
SIDD 001:2021 The tree inspection and diagnostic standard Standard inspekcji i diagnostyki drzew	2021	Tree assessment	PL/ENG	PL	http://drzewa.org.pl/standardy/ - PL http://drzewa.org.pl/en/knowledge/ - ENG
SODiZ 001:2021 The standard of protection of trees and other plants in the investment process	2021	Tree protection in building areas	PL/ENG	PL	http://drzewa.org.pl/standardy/ - PL http://drzewa.org.pl/en/knowledge/ - ENG
Standards for working in trees and their surroundings. Implementation manual Standardy prac na drzewach i w ich otoczeniu. Czym są i jak je stosować. Instrukcja dla użytkowników.	2021	Tree standards implementation	PL/ENG	PL with general content useful for other countries also	http://drzewa.org.pl/standardy/ - PL http://drzewa.org.pl/en/knowledge/ - ENG
UNITED KINGDOM					
Arboricultural Association UK - Code of practise	2020	Industry code of Practice for aerial tree work operations	ENG	GB	https://www.trees.org.uk/Book-Shop
Arboricultural Association UK - Technical Guide for aerial work operation	2020	Technical Guides for aerial tree work operations	ENG (hard copy and digital), CZ (Digital only)	GB	https://www.trees.org.uk/Book-Shop



6. HOW TO PREPARE A TRAINING PROGRAMME BASED ON ETT CURRICULUM AND ETT EXAM RULES

Any training centre can prepare a training programme for ETT candidates using the materials developed in the project. Some notes on how to use them are described below.

1. Using the Curriculum, select the competency group for which you want to prepare the training.
2. Check what training is currently being provided and whether it covers the competences in the Curriculum.
3. Determine how many training hours you are able to provide for the relevant competencies as part of your ETT training.
4. Check out what content for a particular competence area is included in the ETT Study Guide.
5. Decide in which form the training will be conducted (see. 4.1).
6. Refer to the sample training programmes

in Appendix D. Use one of the syllabuses as a basis for the training programme you are creating.

7. Involve trainers in the preparation of the training programme. Include trainers in the syllabus creation in topics such as:
 - defining the areas of knowledge and skills to be imparted by the training;
 - purpose(s) of the training;
 - the number of hours scheduled for training and scheduling;
 - training methods and form of training;
 - training location;
 - tools, equipment and other useful/necessary aids; and
 - literature - e.g. distinguishing between essential and complementary literature.

Sample tasks or questions to test your knowledge are also helpful. You will find samples of these in the Study Guide in the chapter for the relevant competence area.

In Annex D you will find sample syllabuses prepared for selected topics/competencies from the ETT Curriculum. A number of examples can also be found in several languages in the publications of the Tree Assessor project.¹⁰

7. LIST OF APPENDICES

In the appendices, we have collected information that is useful for training and examination centres, as well as examples of materials that were used in the project for the test exam. You can use them in any format and the documents can also be changed and developed on an open access basis.

APPENDIX A. Challenges identified in the the survey conducted during the Project

APPENDIX B. ETT candidates form used in the Project

APPENDIX C. References - sources for trainers

APPENDIX D. Detailed programmes of the training / syllabuses of chosen topics

APPENDIX E. Examples of training simulations tasks used in the Project workshop

APPENDIX F. Examples of ETT exam content based on the Project test exam

¹⁰.<http://tree-assessor.dobrekadry.pl/en/work/basic-and-advanced-tree-assessment-guidelines-for-professional-education>

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ETT 2020 ERASMUS+ PROJECT WORKING GROUP

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Co-funded by the
Erasmus+ Programme
of the European Union