QUALIFICATION DOSSIER

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Training Green Logistics Managers to Avoid the Environmental Effects of Logistics

(LOG-IN-GREEN)

QUALIFICATION DOSSIER

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TABLE OF CONTENTS

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1. INTRODUCTION

In our modern world with rapidly changing technologies, people need a higher and broader set of skills to work, communicate, access information, products and services, and take part in social and civic activities. A proper understanding and valuing of skills and qualifications is fundamental in order to achieve a better match between the supply of skills and the needs of the labour market. A shared European framework can support the understanding and valuing of skills and qualifications. It can also help individuals to acquire and update skills throughout their life as they move between different types and levels of education, and between education and employment, within and across countries.

Qualifications express what people know, understand and are able to do. They can take different forms such as a (university) diploma or (skills crafts) certificate. Transparency about what people actually learned in order to obtain a qualification ('learning outcomes') is key to ensuring that individuals, employers and education and training providers give the appropriate economic, social and academic value to qualifications.

The European Qualifications Framework for lifelong learning (EQF) aims to improve the transparency, comparability and portability of people's qualifications. The EQF was set up in 2008 as a common reference framework of qualifications, expressed as learning outcomes at increasing levels of proficiency. The framework serves as a translation device between different qualifications systems and their levels. It is intended to benefit learners, workers, job-seekers, employers, trade unions, education and training providers, qualification recognition bodies, government authorities and international organisations.

The EQF Recommendation was revised in 2017 in order to adapt it to the reality of today and be ready for the challenges of tomorrow. Its revision has kept the core objectives agreed a decade ago to create transparency and mutual trust in the landscape of qualifications in Europe. The revision was one of the 10 key actions of the New Skills Agenda for Europe, which aims to improve the quality and relevance of training, make skills more visible, and improve skills

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intelligence. As its name suggests, the EQF is also one of the frameworks to help deliver on the principles of the European Pillar of Social Rights. The very first of the Pillar's 20 principles is that everyone has the right to quality and inclusive education, training and lifelong learning in order to maintain and acquire skills that enable them to participate fully in society and successfully manage transitions in the labour market (European Union, 2018).

2. PRINCIPLES FOR QUALIFICATION DOSSIER CREATION

The EQF defines a qualification as (European Union, 2018):

> "*the formal outcome of an assessment and validation process obtained when a competent body determines that an individual has achieved learning outcomes to given standards"*.

Qualifications serve a variety of purposes. They signal to employers what their holders are expected to know, do and understand ('learning outcomes'). They may be needed to access certain professions. They help education and training authorities and providers to determine the level and content of learning acquired by an individual. They are also important for an individual as an expression of personal achievement. Qualifications play an important role in raising employability, easing mobility and improving access to further education (European Union, 2018).

Qualifications usually take the form of certificates and diplomas awarded following education, training, learning and (sometimes) work. The content and the level of qualifications that are part of a quality assured framework are trusted sources of information. They act as a form of currency that individuals can use for employment or further learning purposes (European Union, 2018).

EQF objectives stand on:

- Transparency, comparability and portability of people's qualification
- Employability, mobility and social integration of workers and learners
- Linking formal, non-formal and informal learning

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- Supporting the validation of learning outcomes acquired in different settings
- Contributing to modernising education and training systems.

2.1 TRANSPARENCY, COMPARABILTY AND PORTABILITY OF PEOPLE'S QUALIFICATIONS

European education and training systems are diverse and reflect national traditions. The differences between them make it difficult to assess what someone with a qualification from another country knows, understands and is capable of doing in learning or work contexts. The value of a qualification awarded in one country is therefore not necessarily understood in others, which can hamper 'trust' in the quality and content of such qualifications. The same goes for qualifications awarded outside of formal education and training systems, and by international bodies and organisations. This lack of trust can impact professional development, access to employment opportunities and access to further learning, creating barriers to mobility in the EU, within and across borders.

The EQF is a common reference framework that allows qualifications from different countries to be compared easily. This is achieved by supporting the use of learning outcomes for each qualification, in order to make them more transparent and easier to understand. In this way, the EQF supports the cross-border mobility of learners and workers, and promotes lifelong learning and professional development across Europe (European Union, 2018).

A qualifications framework classifies qualifications according to a set of criteria for specified levels of learning achieved. It aims to integrate and coordinate qualifications, as well as improve the transparency, accessibility and quality of qualifications in relation to the labour market, the education and training system, and civil society. Qualifications frameworks support lifelong learning (i.e. all learning activity undertaken throughout life), with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective. This definition covers the full range of formal, non-formal and informal learning.

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Qualifications are linked to national qualifications frameworks or systems and national qualifications levels are referenced to the 8 EQF levels through national qualifications frameworks or systems

The EQF is defined by eight learning outcomes-based levels. Accompanying level descriptors show how expectations of knowledge, skills, autonomy and responsibility increase as learners progress from level 1 to level 8. These levels, along with the descriptors, function as a translation grid and make it possible to compare qualifications from different countries and institutions (Figure 1).

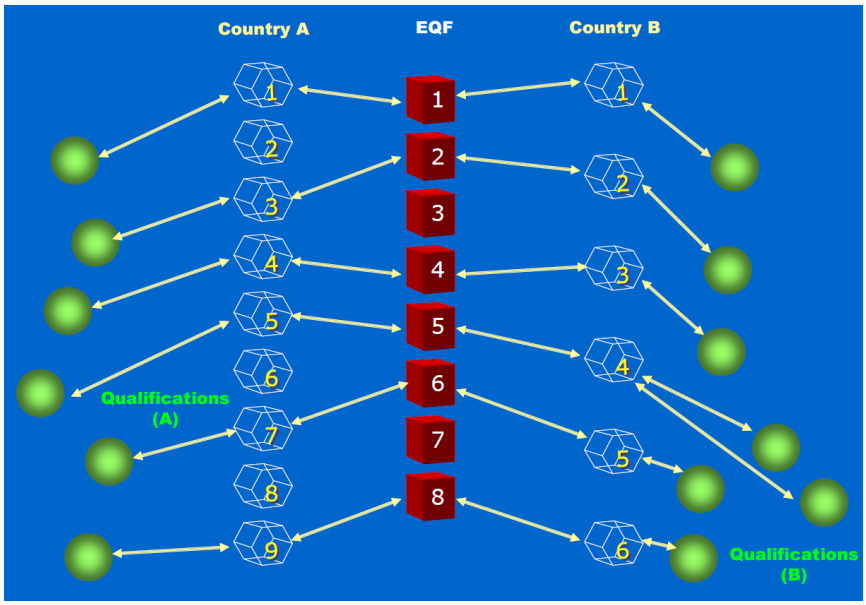

Figure 1: EQF- a common reference framework.

The EQF is designed to cover all types and levels of qualifications including those from higher education, Vocational Education and Training (VET) and general education, as well as qualifications awarded by the private sector or international organisations.

EQF levels should be included on qualifications in a way as:

- Qualifications documents and databases/registers of qualifications should include a reference to the applicable EQF level.

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- Information on qualifications should be readily accessible to the public.
- Information on qualifications and their learning outcomes to be accessible and published using the common data fields. Being shown on certificates and diplomas helps make the EQF (and the NQF) visible for individuals and employers.

EQF's eight levels expressed as learning outcomes with increasing levels of proficiency. Levels are descripted as knowledge, skills and responsibility and autonomy. Official Journal of the European Union (2017) provided definitions to apply in this dossier:

> *'learning outcomes' means statements regarding what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and responsibility and autonomy;*
>
> *'knowledge' means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study. In the context of the EQF, knowledge is described as theoretical and/or factual;*
>
> *'skills' means the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments);*
>
> *'responsibility and autonomy' means the ability of the learner to apply knowledge and skills autonomously and with responsibility;*
>
> *'competence' means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development;*

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'validation of non-formal and informal learning' means the process of confirmation by a competent authority that an individual has acquired learning outcomes acquired in non-formal and informal learning settings measured against a relevant standard and consists of the following four distinct phases: identification through dialogue of particular experiences of an individual, documentation to make visible the individual's experiences, a formal assessment of those experiences and certification of the results of the assessment which may lead to a partial or full qualification;

'formal recognition of learning outcomes' means the process of granting official status by a competent authority to acquired learning outcomes for purposes of further studies or employment, through (i) the award of qualifications (certificates, diploma or titles); (ii) the validation of non-formal and informal learning; (iii) the grant of equivalence, credit or waivers;

'credit' means confirmation that a part of a qualification, consisting of a coherent set of learning outcomes has been assessed and validated by a competent authority, according to an agreed standard; credit is awarded by competent authorities when the individual has achieved the defined learning outcomes, evidenced by appropriate assessments and can be expressed in a quantitative value (e.g. credits or credit points) demonstrating the estimated workload an individual typically needs for achieving related learning outcomes;

'credit systems' means a transparency tool for facilitating the recognition of credit(s). These systems can comprise, inter alia, equivalences, exemptions, units/modules that can be accumulated and transferred, the autonomy of providers who can individualise pathways, and the validation of non-formal and informal learning;

'credit transfer' means the process of allowing individuals who have accumulated credit in one context to have it valued and recognised in another context.

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Each of the 8 levels of EQF is defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level in any system of qualifications (Official Journal of the European Union, 2017).

Table 1: EQF's level of 1-4 descriptors.

	Knowledge	Skills	Responsibility and autonomy
	In the context of EQF, knowledge is described as theoretical and/or factual.	In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	In the context of the EQF responsibility and autonomy is described as the ability of the learner to apply knowledge and skills autonomously and with responsibility
Level 1 The learning outcomes relevant to Level 1 are	basic general knowledge	basic skills required to carry out simple tasks	work or study under direct supervision in a structured context
Level 2 The learning outcomes relevant to Level 2 are	basic factual knowledge of a field of work or study	basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	work or study under supervision with some autonomy
Level 3 The learning outcomes relevant to Level 3 are	knowledge of facts, principles, processes and general concepts, in a field of work or study	a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	take responsibility for completion of tasks in work or study adapt own behaviour to circumstances in solving problems
Level 4 The learning outcomes relevant to Level 4 are	factual and theoretical knowledge in broad contexts within a field of work or study	a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities

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Table 2: EQF's level of 5-8 descriptors.

	Knowledge	Skills	Responsibility and autonomy
Level 5 (*) The learning outcomes relevant to Level 5 are	comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	exercise management and supervision in contexts of work or study activities where there is unpredictable change review and develop performance of self and others
Level 6 (**) The learning outcomes relevant to Level 6 are	advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts take responsibility for managing professional development of individuals and groups
Level 7 (***) The learning outcomes relevant to Level 7 are	highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research critical awareness of knowledge issues in a field and at the interface between different fields	specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8 (****) The learning outcomes relevant to Level 8 are	knowledge at the most advanced frontier of a field of work or study and at the interface between fields	the most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

(*) The descriptor for the short cycle developed by the Joint Quality Initiative as part of the Bologna process, (that can be within or linked to the first cycle), corresponds to the learning outcomes for EQF level 5.
(**) The descriptor for the first cycle corresponds to the learning outcomes for EQF level 6.
(***) The descriptor for the second cycle corresponds to the learning outcomes for EQF level 7.
(****) The descriptor for the third cycle corresponds to the learning outcomes for EQF level 8.

2.2 EQF QUALITY ASSURANCE PRINCIPLES

Trust in the quality and level of qualifications with an EQF level is essential in order to support mobility across sectoral and geographical borders, making quality assurance essential. The 2017 Recommendation reinforced the quality assurance principles of the EQF, which are expressed in the following ways (European Union, 2018):

- Member States should ensure that qualifications with an EQF level are in accordance with the common principles for quality assurance set out in Annex IV (Official Journal of the European Union, 2017), without prejudice to national quality assurance principles that apply to national qualifications.
- EQF referencing criteria 5 and 6 concern quality assurance (Official Journal of the European Union, 2017). Criterion 5 demands that the national quality assurance system(s) for education and training refer(s) to the NQFs or systems and are consistent

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with the principles on quality assurance as specified in Annex IV to the Recommendation. Criterion 6 states that the referencing process shall include a stated agreement from the relevant quality assurance bodies that the referencing report is consistent with the relevant national quality assurance arrangements, provisions and practice.

- Annex IV to the EQF Recommendation contains 10 quality assurance principles for qualifications that are part of NQFs or systems referenced to the EQF (Official Journal of the European Union, 2017). They state that all qualifications with an EQF level should be quality assured to enhance trust in their quality and level. The principles are compatible with the two existing European frameworks for quality assurance: the European Standards and Guidelines framework for higher education and the European Quality Assurance in Vocational Education and Training framework.

All qualifications with an EQF level should be quality assured to enhance trust in their quality and level. In accordance with national circumstances and taking into account sectoral differences quality assurance of qualifications with an EQF level should (Official Journal of the European Union, 2017):

- address the design of qualifications as well as application of the learning outcomes approach;
- ensure valid and reliable assessment according to agreed and transparent learning outcomes-based standards and address the process of certification;
- consist of feedback mechanisms and procedures for continuous improvement;
- involve all relevant stakeholders at all stages of the process;
- be composed of consistent evaluation methods, associating self-assessment and external review;
- be an integral part of the internal management, including sub-contracted activities, of bodies issuing qualifications with an EQF level;
- be based on clear and measurable objectives, standards and guidelines;
- be supported by appropriate resources;

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- include a regular review of existing external monitoring bodies or agencies, carrying out quality assurance;
- include the electronic accessibility of evaluation results.

2.3 DEVELOPING LEARNING OUTCOMES

Learning outcomes are used for a wide range of purposes, directly influencing the way we define and write outcome statements. The level of detail varies in moving from qualifications framework to teaching and assessment. While qualifications frameworks provide a general reference for comparing qualifications and distinguishing levels, learning-outcomes-based qualifications standards, curricula and assessment specifications have to be defined and written in a way that 'speaks to' learners and teachers and adds value to the learning process (Cedefop, 2017).

Learning outcomes are perceived as adding value for several purposes, as outlined in previous chapters. However, they are not to be taken for granted: any benefits eventually depend on the way learning outcomes are understood, defined, written and applied. Different uses will emphasise different benefits (Cedefop, 2017): (1) for the learner, (2) for the teacher/instructor, (3) for the assessor, (4) for the education and training instituion, and (5) for society and labour market (see Figure 2).

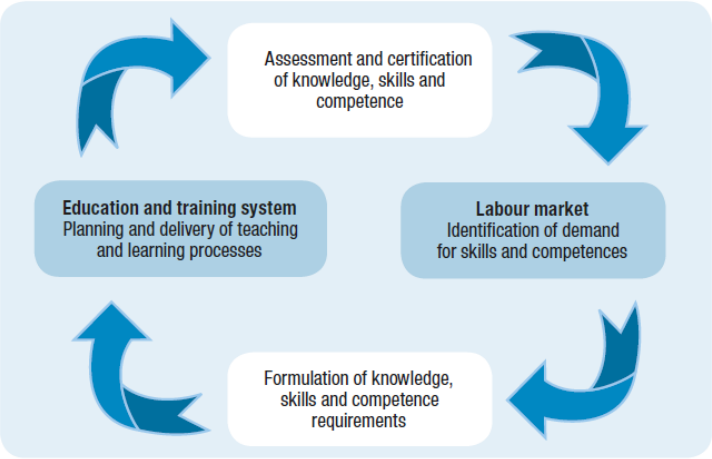

Figure 2: The feedback loop education-training and labour market (Cedefop, 2017).

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Learning outcomes are best understood as an approach that can be adapted to and applied in different policy, teaching and learning settings. It follows that there is no single correct or apt way of approaching them. The term can have a range of connotations and denotations, precisely because it is used in different contexts (Cedefop, 2009). The EQF guidance note on using learning outcomes (European Commission, 2011), states that the definition and writing of learning outcomes refers to taxonomies of learning based on a hierarchy of conceptual stages of learning processes that learning outcomes can be used to describe.

Bloom's taxonomy is one of the most important theoretical influences on thinking about learning outcomes and progression. Bloom's taxonomy in cognitive, affective and psychomotor domain is shown in Figure 3.

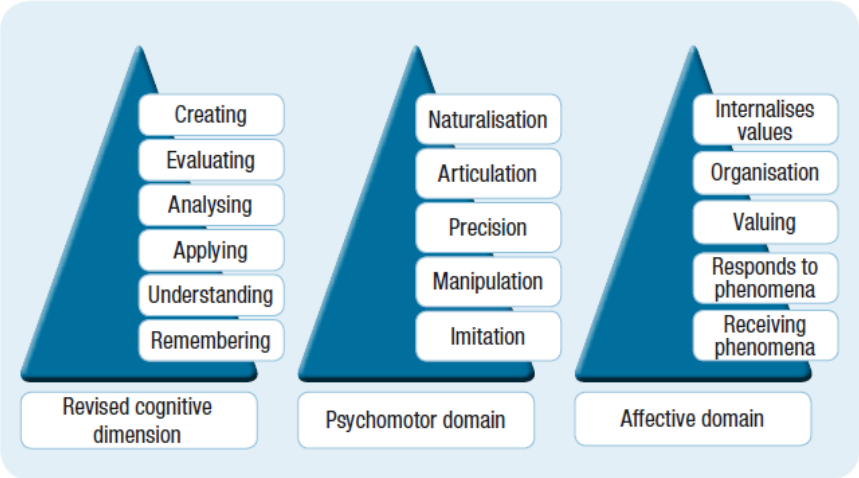

Figure 3: Bloom's taxonomy of learning (Cedefop, 2017).

Qualifications frameworks play an increasingly important role at international, national and sector level. Learning-outcomes-based frameworks seek to increase transparency and allow for comparison of qualifications across institutional and national borders. The learning outcomes descriptors of qualifications frameworks are normally designed using a horizontal axis identifying learning domains (such as knowledge, skills and wider competences of responsibility and autonomy) and a vertical dimension indicating how the complexity of learning increases from level to another.

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For the skills domain, the SOLO (structure of observed learning outcomes) taxonomy is proposed. Learning is shaped by prior knowledge, misconceptions, learning intentions and strategies. The focus is on depth and quality of understanding, rather than quantity of information. The structure of SOLO taxonomy is shown in Figure 4.

Levels of understanding displayed	Phase of learning	Indicative verbs
Extended abstract: conceptualises at level extending beyond what has been dealt with in the actual teaching and learning process. Can generalise to new areas.	Qualitative phase	Theorise, generalise, hypothesise, reflect, generate.
Relational: indicates orchestration between facts and theory, action and purpose. Understanding of several components which are all integrated conceptually. Can apply the concept to familiar problems and work situations.		Compare, contrast, explain causes, integrate, analyse, relate, apply.
Multistructural: indicates understanding of boundaries but not of systems. Understanding of several but discreet components. Disorganised collection of ideas or concepts around an issue. Not relating items in list.		Enumerate, classify, describe, list, combine, do algorithms.
Uni-structural: concrete, minimalistic understanding of an area, focuses on one conceptual issue in a complex case.		Identify, memorise, do simple procedure.
Pre-structural; no understanding demonstrated.	Quantitative phase	Misses the point.

Figure 4: The structure of SOLO taxonomy.

Progression in responsibility and autonomy can be measured using Dreyfus taxonomy. Dreyfus taxonomy, describes learner progression from 'novice to expert'. The Dreyfus categorisation strongly emphasises how autonomy and responsibility is embedded in context, establishing an important connection to the broader understanding of competence.

- Novice learners have incomplete understanding and approach tasks mechanistically. Novice learners need supervision.
- Advanced beginners have a working understanding of concepts. They tend to see actions as a series of steps. Advanced beginners can complete simple tasks without supervision.
- Competent learners are able to understand context. They may complete work independently to an acceptable standard.
- Proficient learners have deeper understanding and are able to see actions holistically. They are consistently able to achieve a high standard.
- Expert learners have an authoritative, deep and holistic understanding. They are able to deal with routine matters 'intuitively', to go beyond existing interpretations. They consistently achieve excellence.

Figure 5: Dreyfus taxonomy (Cedefop, 2017).

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2.3.1 Some fundamentals of writing learning outcomes

Using learning outcomes represents a perspective and a mode of thinking. The focus is always on the learner and what he/she is expected to know, be able to do and understand (Cedefop, 2017):

- when writing learning outcomes, the learner is always put at the centre;
- intentional and actually achieved learning outcomes are distinguished.
- improving the way learning outcomes are used requires continuous dialogue (feedback loop) between intended and actual outcomes.
- learning outcomes help to clarify intentions and demonstrate actual achievements of learning.
- learning outcomes must remain open to the explorative and to what has yet to be experienced and articulated;
- learning outcomes never operate in isolation but have to be defined and written within a broader context where learning inputs are considered.
- avoid copying (cut and paste) learning outcomes from elsewhere. Defining and writing learning outcomes should normally start 'from a blank sheet of paper', evolve as an iterative process, and involve all stakeholders/team members.

2.3.2 General guidelines about writing learning outcomes

Simplicity is important when writing learning outcomes. Too much detail and overly complex statements prevent learners, teachers and assessors from relating to the statements (Cedefop, 2017):

- defining and writing learning outcomes should be treated as an iterative process, starting from overall objectives and moving stepwise towards specific statements for units and assessment.
- when writing learning outcomes to orient a qualification/programme or a qualification unit/course, carefully consider the number of statements used. When defining a course or unit it is generally recommended limiting the number of statements (perhaps four to six statements);

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- when defining and writing learning outcomes for a full qualification or a programme it is generally recommended to keep the number of statements as low as possible.
- limiting the number of statements makes it easier for the learner to relate to the intentions and engage in the learning;
- limiting the number of statements makes it easier to plan teaching, to facilitate learning and eventually to carry out assessments;
- when writing a learning outcomes statement, focus on the learner and start with an action verb, followed by the object of the verb as well as a statement specifying the depth/breadth of learning to be demonstrated, and complete with an indication of the context;
- in general, there should not be more than one action verb for each learning outcome.

2.3.3 Learning outcomes statements to support learning and assessment

Intended learning outcomes can only be made visible as actually achieved learning outcomes following assessment and/or through demonstration of achieved learning (Cedefop, 2017):

- when writing learning outcomes for a programme or a course the effort required by the learner should be considered. Learning outcomes statements can easily be overloaded and lose their relevance as tools supporting the learning process;
- given that learning outcomes provide a reference point for the recognition and validation of non-formal and informal learning, focus should be on the learning to have been achieved, not on a particular time required;
- consistent application of learning outcomes requires continuous dialogue between intended and actual outcomes, seeking to improve intended learning outcomes based on the actually achieved outcomes;
- involve all relevant stakeholders in the development and review of learning outcomes, teachers and trainers as well as relevant external stakeholders. Learning outcomes need to be a 'living thing' and continuously reviewed and improved;
- aligning learning outcomes to teaching and learning.

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2.4 ECVET AS TECHNICAL FRAMEWORK

The European Credit System for Vocational Education and Training (ECVET) is a technical framework for the transfer, recognition and accumulation of individuals' learning outcomes with a view to achieving a qualification (EMEU, 2016).

ECVET aims to support the mobility of European citizens, facilitating lifelong learning (formal, informal and non-formal learning) and providing greater transparency in terms of individual learning experiences and making it more attractive to participate in mobility or to move between different countries and different learning environments. An essential element of the use of ECVET during formal education is the principle of 'avoiding duplication' and ensuring that the time spent abroad is not considered a delay to achieving current training goals or qualifications.

ECVET has paid particular attention to the identification of units of learning outcomes; it sees these as critical for promoting transfer and accumulation of vocational skills and competences across Europe. ECVET is intended to facilitate the recognition of learning outcomes in the framework of mobility for the purpose of achieving a qualification. Its application for a given qualification is based on the following principles and technical specifications (EMEU, 2016):

(a) A unit of learning outcomes is a component of a qualification consisting of a coherent set of knowledge, skills and competences of responsibility and autonomy that can be assessed and validated. This presupposes that the units of learning outcomes are structured comprehensively and logically and that they can be assessed. Units of learning outcomes can be specific to a single qualification or common to several qualifications and may also describe so-called additional qualifications which are not part of a formal qualification or curriculum.

(b) Units of learning outcomes achieved during mobility are assessed by the hosting institution and after successful assessment, transferred to the home institution. In this second context, they are validated and recognised by the competent institution as part of the requirements (obligatory or additional) for the qualification that the person is aiming to achieve. Competent institution or body means an institution which is responsible for designing and awarding qualifications or other functions linked to ECVET, such as assessment, validation and recognition of learning outcomes, under the

rules and practices of participating countries (legal framework). Depending on the system, the same function (e.g. responsibility to design of qualifications, units, assessment criteria etc.) may be the responsibility of different types of actors (e.g. ministries, social partners, VET providers). Users of ECVET therefore need to first clarify their role(s) with regard to their own qualifications system. They have to reflect on their competences in their qualifications system and how these relate to the main functions of ECVET.

(c) Successful ECVET cooperation is based on mutual trust based on facts and transparent agreements on the quality assurance aspects of the mobilities. The official and documented establishment of partnerships between the hosting and the sending or home institutions aims at providing a general framework for cooperation and networking as well as accepting each other's quality assurance, assessment, validation and recognition criteria and procedures. Therefore, the minimum requirement for the individual mobilities is the use of a learning agreement and some form of a transcript of records. The documents should distinguish between (competent) home and hosting institutions and specify the particular conditions for a period of mobility, such as the identity of the learner, the duration of the mobility period and the expected learning outcomes as well as the procedures and criteria for assessment of these learning outcomes.

Cedefop (2017) outlined the key conditions for delivering ECVET, confirming the importance of *improved legislative support* and *enhanced dialogue and communications* for ECVET implementation to be successful (see Figure 6):

- From a **systems-level** perspective, the aim is for ECVET, and its technical components (for example, units of learning outcomes, credit points, MoU), to become embedded within existing education, training and qualifications systems, making ECVET a *regular feature of European VET*, at all levels. For this to happen, Government commitment is clearly required, in all European countries, supporting the incorporation of ECVET principles into existing education, training and qualifications systems and frameworks.

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- From a **geographical mobility** perspective, ECVET specifically targets the increased recognition of learning outcomes, integrating mobility into existing learning pathways, and enabling individuals to build on that which they have learned abroad, or in different education and training institutions. For this to happen there is a need for *increased understanding and mutual trust* among participating mobility actors, and for the development of *national and international ECVET partnerships*.
- As a **mobility practitioner**, wishing to embark on the ECVET journey, similar pre-conditions exist in terms of securing top-level commitment to the *broader ECVET principles*, communicating and promoting the benefits to all parties, and confirming the roles and responsibilities of all actors within and beyond the organisation.

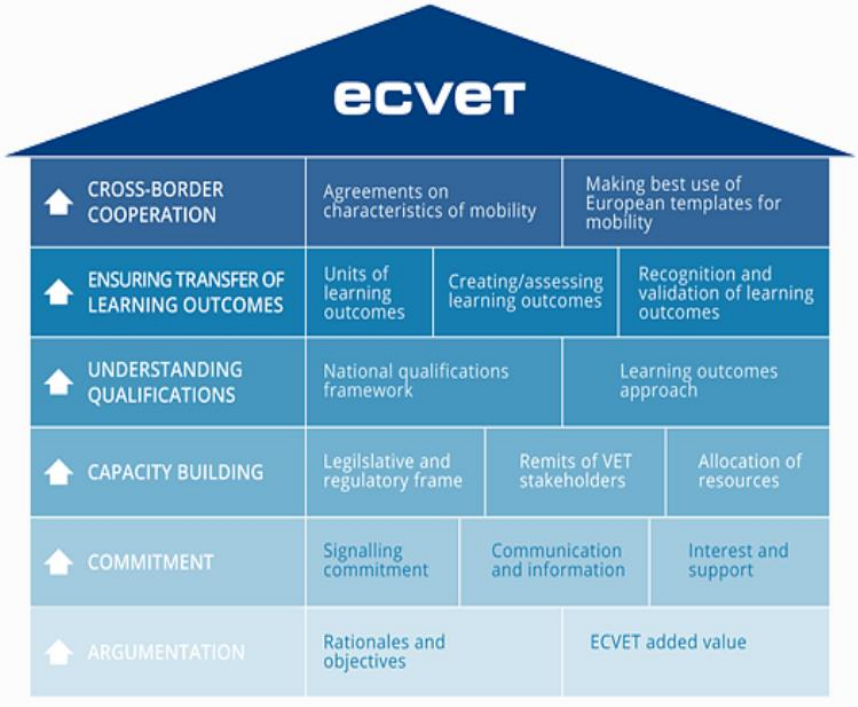

Figure 6: The key conditions for delivering ECVET (Cedefop, 2017).

Irrespective of the ECVET goal being targeted there is a need to secure *commitment to ECVET principles and practices* from a broad spectrum of education and training stakeholders, and potential beneficiaries, targeting *shared responsibility* among all such actors.

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Those considering the application of ECVET principles, tools or practices to a new or existing mobility programme, there is a simple way of dividing tasks and activities, distributing these across three distinct stages that cover planning and preparation (Before Mobility), delivery and implementation (During Mobility) and evaluation and follow-up (After Mobility) (see Figure 7).

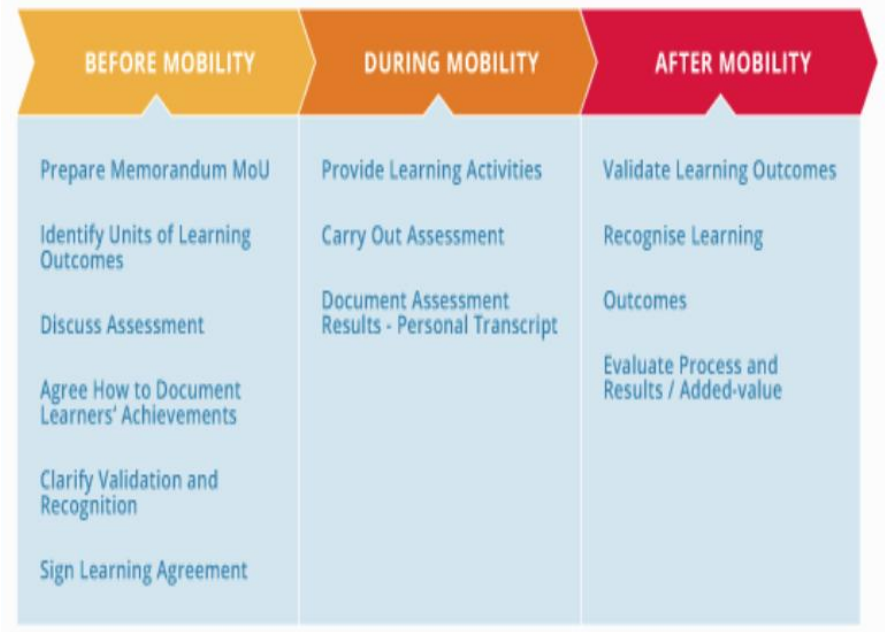

Figure 7: ECVET mobility model (Cedefop, 2017).

ECVET as a whole supports quality in mobility. However, to ensure continuous improvement, the use of ECVET for geographical mobility must also be underpinned by quality assurance procedures. Qulity assurance tools are shown in Figure 8.

European Quality Assurance provides support for structuring these procedures. The four-step procedure of the Quality Cycle (planning - implementation - evaluation - review) can be applied to specific learner experiences in mobility programmes and also, more broadly, to ECVET partnerships.

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Phase	ECVET INDIVIDUAL LEARNER Mobility: QA Tools	ECVET Partnerships: QA Tools
Planning	Tools used for implementing ECVET before, during and after *individual learner mobility* can also be used in Quality Assurance - for example, the learning agreement, assessment grids, documentation evidencing achieved learning outcomes.	Memorandum of Understanding (MoU).
Implementation		The same tools can be used as during the delivery of mobility.
Evaluation	Tools used for implementing ECVET before, during and after *individual learner mobility* can also be used in Quality Assurance - for example, feedback from questionnaires gathered at key stages in the delivery of a mobility programme.	Collection of relevant data, relating to: • Assessment results. • Learner successes during mobility. • Impact of the mobility experience on learners' future pathways.
Review	Action plan based on evaluation results, specifying required change or adaptation.	Action plan based on evaluation results, specifying required change or adaptation.

Figure 8: Quality assurance tools (Cedefop, 2017).

2.4.1 Learning unit and ECVET

The learning outcome itself (or more learning outcomes) is not yet sufficient. Learning outcomes should be connected into a meaningful learning unit or structured into several learning units. When designing a Mobility Teaching Unit, we will first of all originate from the goals and units of the program, in which the student is regularly involved, and on the other hand, from the program or program, work tasks in which the student will be included abroad. The result will arise in a dialogue between a student, his teacher/mentor abroad who will accept he/she.

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For each learning unit, their number is determined according to the importance and complexity of the learning outcomes included in this unit, and according to the necessary effort, time, which an individual invests on average in acquiring knowledge, skills and competences. In principle, an individual can achieve up to 60 ECVET points in one year.

ECVET recommends that the description of the unit be included (Cedefop, 2017):

- *Title of the Learning unit*
- *Title of the qualification to which the unit relates*
- *EQF level*
- *ECVET points*
- *Main goals of the Learning unit / Core work tasks*
- *Learning outcomes*)
- *Criteria for assessment*
- *Assessment procedures*
- *Additional information*
- *Developed by*

2.5 ASSESSEMENT AND DOCUMENTATION

In our opinion, the assessment and evaluation criteria are among the core elements of the ECVET study unit. Namely, we cannot admit the achieved learning outcomes without an agreed and performed evaluation. Assessment is a basis for validation and recognition of learning outcomes when learners' credit is being transferred. The fact that learners' learning outcomes have been positively assessed, in line with the learning agreement, and the result of the assessment is documented serves as basis for validating and recognising learners' credit. Credit in this context means the assessed learning outcomes (EMEU, 2016).

Assessment gives additional value to mobility. The fact that learners are assessed, the learning outcomes are made visible and they are aware, as well as their teachers, of the progress they

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made during mobility is important for identifying the added value of mobility for learners. Learners' assessment therefore contributes to valorise mobility. Assessment methods and criteria should therefore be made available to the sending organisations prior to mobility. According to the ECVET recommendation the assessment process should reflect the norms and practises of the host organisation.

The choice of the form of evaluation or the agreement on the form of assessment depends on the way in which the learning unit is to be implemented, from the direction and experience of both partners, and also on the willingness / competence of all those involved (student, teacher, trainer, mentor ...). It is recommended that evaluation be conducted in a mutual dialogue between the student and the mentor, as well as the teachers, if they can be present.

The selection of the assessment scale depends on the agreement between the partner institutions. Assessment scales vary by country. It is usually the decisive system they have in the host country. When it is agreed that the teacher assesses student, he will probably use a scale that he also uses. In this case, we recommend that you record the conversion of the ratings to the home scale in a memorandum.

The classification of learning outcomes statements into domains (such as knowledge, skills and responsibility and autonomy competences) does not necessarily aid assessment as these elements are often combined. Learners meet the intended learning outcomes to different degrees. A few only meet minimally acceptable standards, others fall in between and a third group will reach excellence. These levels of performance – articulated through assessment specifications – can be clarified using learning outcomes statements. It is often said that learning outcomes need to be written as threshold statements, as (minimum) requirements to be met by the learner. Assessment criteria should be written to support grading.

Learning outcomes, written as threshold statements, do not prevent learners going beyond these thresholds: they orient a learning process but should not contain or restrict it. Some of the

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criticism of learning outcomes is linked to this point, implying that the process of stating outcomes prevents learners going beyond minimum expectations.

When designing the assessment process of the module or learning unit the following should be considered (EMEU, 2016):

1. The hosting institution organises the assessment of learning outcomes as specified in the module description. The assessment criteria are uploaded as an annex to the module on the EMEU website when the registering is opened. The keep it simple principle should be followed also when the host institution decides on the assessment methods and criteria while at the same time it is important to take into consideration the minimum requirements of each sending institution.
2. Assessment criteria and indicators should be clearly related to the agreed learning outcomes and the expected EQF level. The assessment criteria should be transparent and reflect each learning outcome. ECVET recommendation endorses orientation towards minimum demands for assessing the learning outcomes. Therefore, the most ECVET compliant scale for assessing would be to use only PASS/FAIL. If the host organization uses normally a different scale, that scale can also be used. Most frequently used scale for assessment of ECVET learning outcomes is a 3-level scale:
    1- Satisfactory (needs constant guidance and instruction);
    2- Good (able to perform according to instructions)
    3- Excellent (able to work independently and creatively)

3. The selection of the method(s) of assessment should be appropriate to the expected learning outcomes. Assessment methods might include one or several of the following:
    - self-assessment
    - peer-assessment
    - simulated conversations
    - structured (oral or written) formal feedback
    - written assignments
    - written exam
    - work samples

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- (online) portfolio (e.g. blog, Instagram)
- video, photographs, drawings
- skills demonstration
- presentation
- observation

4. The profile of the assessor(s) should also reflect the norms and practices of the host organisation. Typically, assessors in this context are the teachers or trainers who deliver the module, workplace trainers or tutors with sufficient experience in their sector, other relevant experts and in some cases the customers. Some form of self- or peer-assessment is also beneficial for the learners either as part of the official assessment or as a follow-up to the formal assessment.

In order for the home institute and/ or competent body to be able to validate and recognise the learning outcomes of individual students some documentation on assessment is required. In ECVET terminology this document is called the personal transcript. It is a record of learning achievements signed and stamped after the completion of the mobility period. The learner should always receive at least a copy of the signed and stamped assessment document before leaving the host organisation.

The assessment document should contain at least the following details:

- the identity of the learner
- the identity of the host organisation
- the identity and profile of persons that assessed the learner
- information on learners' assessed learning outcomes: (a) total grade for the module or (b) a grade for each target of assessment or (c) a grade for each learning outcome
- other comments or a written summary of the assessment

As most partners will be required to use the EUROPASS mobility certificate for documenting the learning period abroad as well as the learning outcomes achieved there are two alternatives for documenting the assessment: a) the signed and stamped assessment document can be

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attached to the mobility certificate, and (b) assessment is documented in sections of the mobility certificate.

2.6 VALIDATION AND RECOGNITION

Validation of learning outcomes means the process of confirming that certain assessed learning outcomes achieved by a learner correspond to specific outcomes which may be required for a unit or a qualification. Recognition of learning outcomes means the process of attesting officially achieved learning outcomes through the awarding of units or qualifications.

In the ECVET context both the validation and recognition of learning outcomes are the responsibility of the home institute and/or the competent body of the sending country. To provide the quality of assessment a system must be provided which should be valid, reliable, flexible and fair and based on evidence that is valid, sufficient, current and authentic. Information on qualification should be reported precisely as it is shown in Figure 9.

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Elements for data fields for the electronic publication of information on qualifications with an EQF level

DATA			Required/ Optional
Title of the qualification			Required
Field (*)			Required
Country/Region (code)			Required
EQF Level			Required
Description of the qualification (***)	Either	Knowledge	Required
		Skills	Required
		Responsibility and autonomy	Required
	Or	Open text field describing what the learner is expected to know, understand and able to do	Required
Awarding body or competent authority (**)			Required
Credit points/notional workload needed to achieve the learning outcomes			Optional
Internal quality assurance processes			Optional
External quality assurance/ regulatory body			Optional
Further information on the qualification			Optional
Source of information			Optional
Link to relevant supplements			Optional
URL of the qualification			Optional
Information language (code)			Optional
Entry requirements			Optional
Expiry date (if relevant)			Optional
Ways to acquire qualification			Optional
Relationship to occupations or occupational fields			Optional

(*) ISCED FoET2013
(**) The minimum required information on the awarding body or the competent authority should facilitate to find information about it, which would include its name, or if applicable the name of the group of awarding bodies or competent authorities, completed with a URL or contact information.
(***) This description shall consist of open text fields, with no prescribed use of standard terminology and no obligation for the Member States to translate the description into other EU languages.

Figure 9: Information on qualification (Official journal of the EU, 2017).

The transfer of credit for achieved learning outcomes has three stages: (1) The hosting institute assesses the learning outcomes achieved according to the transparent criteria; (2) The home

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institute checks that the agreed procedures have been followed and validates the credit as a suitable record of the learners' achievement; and (3) The home institute and/or the competent body of the home country then recognise the learning outcomes that have been required.

2.7 GREEN LOGISTICS COMPETENCE AREAS

Logistics is the term widely used to describe the transport, storage and handling of products as they move from raw material source, through the production system to their final point of sale or consumption. Logistics is the integrated management of all the activities required to move products through the supply chain. For a typical product this supply chain extends from a raw material source through the production and distribution system to the point of consumption and the associated reverse logistics.

The logistical activities comprise freight transport, storage, inventory management, materials handling and all the related information processing (Green logistics, 2019). The main objective of logistics is to co-ordinate these activities in a way that meets customer requirements at minimum cost. In the past this cost has been defined in purely monetary terms.

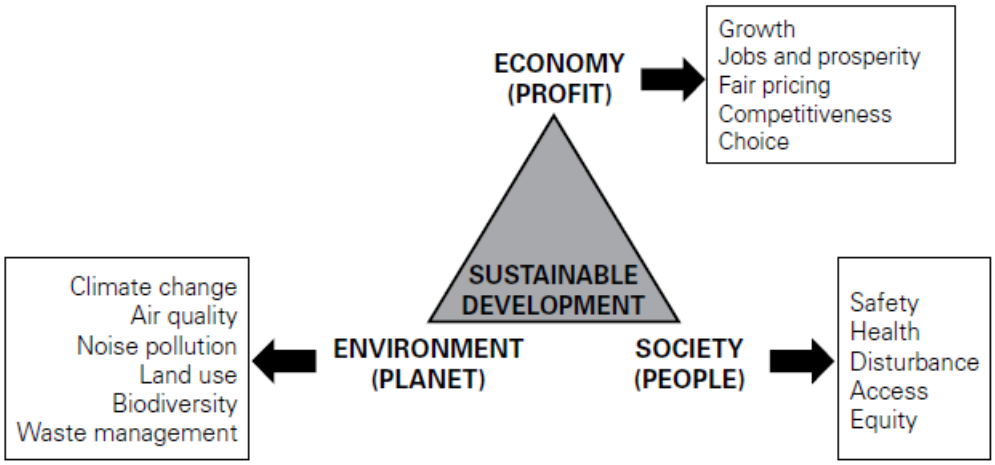

Figure 10: The concept of sustainable development (McKinnon et al., 2015)

As concern for the environment rises, companies must take more account of the external costs of logistics associated mainly with climate change, air pollution, noise, vibration and accidents.

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This research project is examining ways of reducing these externalities and achieving a more sustainable balance between economic, environmental and social objectives (Figure 10).

The responsibility for sustainable development is shared between a multitude of actors, such as international regulatory agencies, national governments, local authorities, businesses, consumers, and research and education institutions. The actors play different, supporting and interacting roles in the pursuit of sustainable development

Figure 11 groups these strands under five headings: reducing freight transport externalities, city logistics, reverse logistics, corporate environmental strategies towards logistics, and green supply chain management.

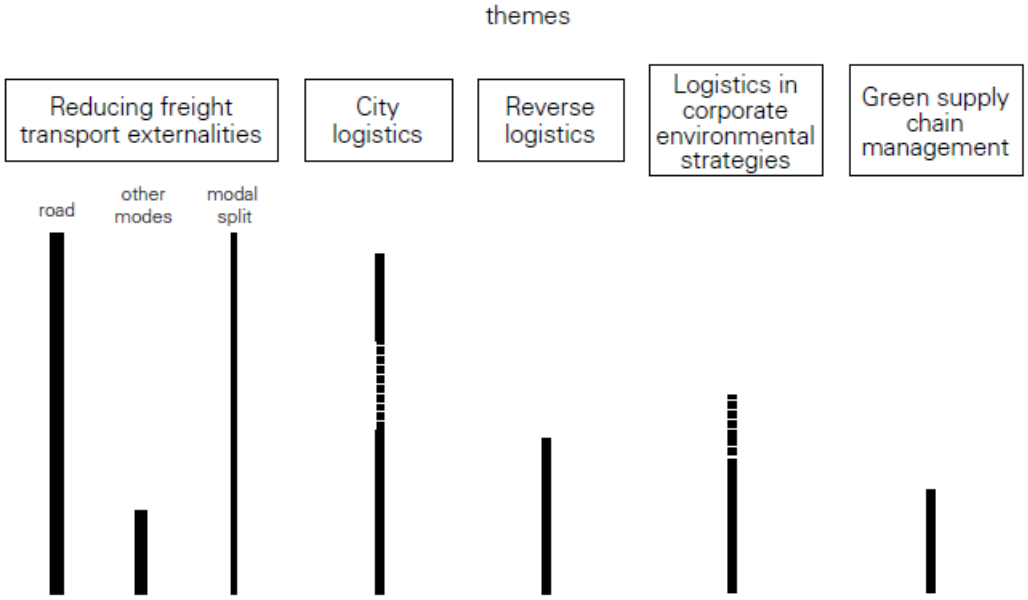

Figure 11: Evolving themes in green logistics (McKinnon et al, 2015).

2.7.1 Log in Green project green logistics areas

Log in Green project defines five interest areas or themes as essentials to green logistics and sustainable development:

1- Basic knowledge about Logistics

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2- Impacts of Logistics: Air Quality, Noise, Environment, Climate Change, etc.
3- Components of Green logistics: Green Transport, Green Warehouses, Green Packaging, Green Logistics Data Collection and Management, and Waste Management.
4- Benefits of Green Logistics: Efficiency, Safety, Health, Equity, Energy efficiency and material efficiency, Energy Solutions, Renewable Energy, etc
5- Urban Logistics

2.7.2 ISCED and ISCO-based Log in Green competence profiling

Log in Green project will provide trainings/education for youth participants between age 20 and 28. As national education systems vary in terms of structure and curricular content, it can be difficult to benchmark performance across countries over time or monitor progress towards national and international goals. In order to understand and properly interpret the inputs, processes and outcomes of education systems from a global perspective, it is vital to ensure that data are comparable. This can be done by applying the International Standard Classification of Education (ISCED), the standard framework used to categorise and report cross-nationally comparable education statistics (ISCED, 2012).

Profiling learner's competencies consists of the several action steps and elements:

- **Competences**: core of the model and "everywhere present" entity are the competences which represent knowledge, skills and responsibility and autonomy competences.
- **Areas**: most competences are connected with some specific area or areas. In case of LOG IN GREEN project, these area is Green Logistics on themes shown in figure 11.
- **Courses**: if we "exclude" competences that an individual can obtain from elsewhere, competences can be formally acquired in formal, non-formal or informal courses, seminars, workshops, etc. By their basic meaning, courses are connected with areas horizontally and vertically.
- **Job profiles**: on the other side we have jobs, and regardless if they are in private or public sector these jobs can be also seen from competence point of view as a list of

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competences defining corresponding job profiles. Similar to courses, also jobs and job profiles are connected with areas.

- **Individuals**: apart from the theoretical side (competences, areas, courses, job profiles), we have the most important integral part of whole image representing practical side - the individuals. Individuals can have some kind and level of education, and can have job(s). Regardless of that, they can be also observed through the list of competences.

For more realistic competence modelling, levels have to be added (Fig. 12). Namely, course don't necessary treat all the competences in the same course at the same level; also for some jobs some competences are needed on higher levels than others; and the same applies for the individuals.

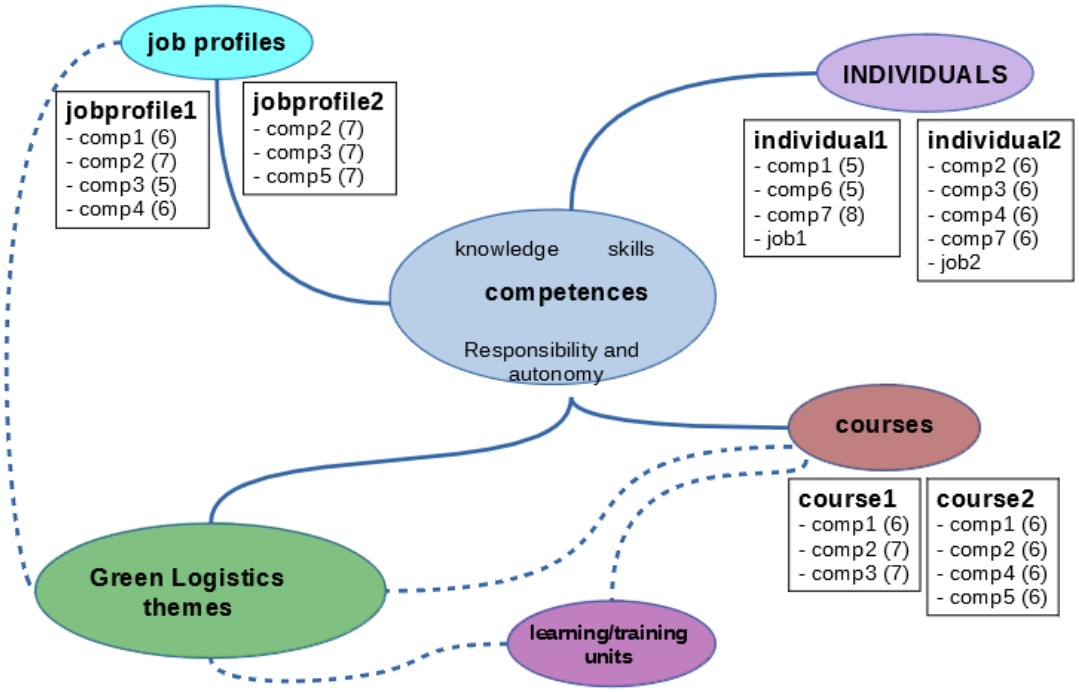

Figure 12: Extended, more realistic, semantic model.

By using the semantic model, several real world questions can be answered, for example: (1) Which jobs are in the "green logistic" area? (2) What I need to know, what must be my skills, and what I have to master for job X? (3) Which course or courses I need to take for job profile

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X? (4) Where can I get all needed knowledge, skills and etc. for job profile X? (5) What is my level of competency? (6) Which job is "nearest/closest" to me? etc.

Project Log in Green will target those from ISCED level 3 and 4, from different fields defined by UNESCO Institute of Statistics, 2015 (Table 2).

Table 2: ISCED fields as Log in Green project target.

Broad field:	Narrow field:	Detailed field:
05 Natural sciences, mathematics and statistics	052 Environment	0520 Environment not further defined 0521 Environmental sciences
06 Information and Communication Technologies (ICTs)	061 Information and Communication Technologies (ICTs)	0610 Information and Communication Technologies (ICTs) not further defined 0611 Computer use 0612 Database and network design and administration 0613 Software and applications development and analysis
07 Engineering, manufacturing and construction	071 Engineering and engineering trades	0710 Engineering and engineering trades not further defined 0711 Chemical engineering and processes 0712 Environmental protection technology 0713 Electricity and energy 0714 Electronics and automation 0715 Mechanics and metal trades 0716 Motor vehicles, ships and aircraft
	072 Manufacturing and processing	0722 Materials (glass, paper, plastic and wood) 0723 Textiles (clothes, footwear and leather)
	073 Architecture and construction	0731 Architecture and town planning 0732 Building and civil engineering
10 Services	101 Personal services	1015 Travel, tourism and leisure
	104 Transport services	1041 Transport services

Log in Green blended learning/training participants who have occupational experiences might have improved individual competence profile with some professional competences acquired in the job. For those participants, the International standard classification of occupations (ISCO)

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will be considered. ISCO is an International Labour Organization (ILO) classification structure for organizing information on labour and jobs.

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Major, sub-major and minor groups for the purposes of Log in Green project is detected using ISCO-08 classification (ILO, 2012) as:

Table 3: ISCO job profiles for Log in Green project green logistics competence profiling.

ISCO code	Job profile	Green Logistics Abilities																															BLCX	EC/BLC
		GLA100	GLA110	GLA111	GLA112	GLA113	GLA120	GLA200	GLA220	GLA311	GLA312	GLA313	GLA321	GLA322	GLA330	GLA341	GLA342	GLA343	GLA351	GLA352	GLA353	GLA354	GLA355	GLA356a	GLA356b	GLA356c	GLA410	GLA420	GLA430	GLA510	GLA520	GLA530	GLA540	GLA550		
ISCO 3112	**Civil Engineering technicians**	4			5									6			5	5			4						6	6		6	6	6			**BLC1**	**2**
ISCO 3115	**Mechanical Engineering Technicians**	6	5					6		5				6				6			5						5	4	5					5	**BLC2**	**3**
ISCO 3113	**Electrical Engineering Technicians**													5	4				6		6		6					6					6		**BLC3**	**2**
ISCO 3141	**Life Science Technicians**	5		4			5			6		5	6			6			5			5												**BLC4**	**2**
ISCO 3511	**Information and Communications Technology Operations Technicians**	4					5			6	5	5				6	6		5							5								**BLC5**	**1**
ISCO 3143	**Forestry Technicians**	5	5	6				5	5		5	5	4					5					5				6						5		**BLC6**	**3**
ISCO 3331	**Clearing and Forwarding Agents**	4					6	5			5			5		5	4			5	5										5				**BLC7**	**2**
ISCO 4323	**Transport clerks**	5		4						5		5																		5		5			**BLC8**	**2**

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ISCO 4321	**Stock clerks**	5			6	4						5	5	4														5	5					**BLC9**	**2**
ISCO 4322	**Production clerks**	4						6		4			5												5	5	5	5					5			**BLC10**	**2**
ISCO 2164	**Town and traffic planners**																													6	6	5	4	6	**BLC11**	**2**
ISCO 2359	**Teaching professional not elsewhere classified**	5					5	5						5						6	6	6													**BLC12**	**3**
ISCO xxxx																																					

In the Table 3 is presented which suggested learning units can be chosen by individual participants to gain his or her Green Logistics Ability (GLA). Each GLA is targeting on specific point of interest of Green Logistics and is described in the chapter 3 Log in Green competence matrix. Numbers in the Table 3 under each GLA specifies the achieved EQF level of individual. In the last column of the Table 3 the European Credit points (EC) of the applied learning course are specified for each individual learning profile.

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3. LOG IN GREEN COMPETENCE MATRIX

Area	Modules	Units of Learning Outcomes	EQF level	Green logistics ability (GLA)	Learning outcomes		
					Knowledge	**Skills**	**Responsibility and Autonomy**
LOGİSTİCS	**1. Basic knowledge about logistics**	1. Basics about logistics	6	GLA100: Will be able to know what logistics is and understand the core elements of logistics.	KN100/6: To determine services and activities that are part of logistic process	SK100/6: Identify the different services and activities in logistics	RA100/6: Able to understand and identify the core elements of logistics
			5		KN100/5: Explain what logistics is and its basic tasks	SK100/5: Organize the different processes included in logistics	RA100/5: Able to distinguish the main strategies when distributing a product.
			4		KN100/4: Describe each element in green logistics	SK100/4: Recognise elements that are part of logistics process	RA100/4: Able to differentiate logistics elements
			6	GLA110: Will be able to classify types of logistics and make use of each of them.	KN110/6: Know each type of logistics and distinguish their characteristics	SK110/6: Contrast the different types of logistics	RA110/6: Able to classify logistics processes by type
			5		KN110/5: Identify the different types of logistics	SK110/5: Classify the different types of logistics	RA110/5: Able to describe types of logistics
			4		KN110/4: understand the differences between types of logistics	SK110/4: Recognize types of logistics	RA110/4: Able to identify different types of logistics

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	1.1 Impacts of logistics	1.1.1 Impacts of transportation	6	GLA111:Will be able to know and classify impacts of transportation on different components of environment and climate change.	KN111/6: Organize protection measures for environmental impacts of transportation	SK111/6: Find solutions to solve impacts of transportation on environment.	RA111/6: Implement more environmental friendly transportation
			5		KN111/5: Assess the environmental concerns and measures	SK111/5: Analyse and categorize sources of pollution from transportation	RA111/5: Supervise transportation taking into consideration environmental impacts.
			4		KN111/4: Recognise sources of pollution from transportation	SK111/4: Determine the impacts of transportation on different environmental components	RA111/4: Provide general information for the prevention of negative impacts from transportation.
		1.1.2 Impacts of Warehouses	6	GLA112: Will be able to know, analyse and assess the environmental impacts of warehouses	KN112/6: Organize protection measures to prevent environmental problems from warehouses	SK112/6: Find alternative solutions to solve environmental impacts from warehouses.	RA112/6: Organise more environmental friendly warehouses
			5		KN112/5: Assess the environmental concerns and measures	SK112/5: Analyse and categorize sources of pollution from warehouses	RA112/5: Supervise warehouses taking into consideration environmental impacts.
			4		KN112/4: Recognise sources of pollution from warehouses	SK112/4: Determine the impacts of different types of warehouses on environment.	RA112/4: Provide general information for the prevention of negative impacts from warehouses.

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		1.1.3 Impacts of Packaging	6	GLA113: Will be able to categorize the wastes from packaging and assess the impacts on environment (air, water, soil, etc.)	KN113/6: Create alternative solutions for different categories of wastes from packaging.	SK113/6: Find alternative solutions to solve environmental impacts from packaging.	RA113/ 6: Able to predict measures to solve the environmental problems originating from packaging.
			5		KN113/5: Understand impacts of packaging wastes according to their composition.	SK113/5: Analyse and categorize sources of pollution from packaging.	RA113/5: Organize packaging activities taking into consideration environmental impacts.
			4		KN113/4: Remember waste management hierarchy.	SK113/4: Determine the impacts of different types of warehouses on environment.	RA113/4: Provide general information for the prevention of negative impacts from packaging.
	1.2. Need for green logistics	1.2.Need for green logistics	6	GLA120: Will understand the necessity for green logistics.	KN120/6: List the factors affecting green logistics applications.	SK120/6: Will be able to select key data for green logistics.	RA120/6: Will develop awareness and attitude towards green logistics training.
			5		KN120/5: List five factors affecting green logistics applications.	SK120/5: Will be able to select data for green logistics.	RA120/5: Able to compare barriers and drivers towards green logistics training.
			4		KN120/4: List three factors affecting green logistics applications.	SK120/4: Will be able to search reliable sources for green logistics.	RA120/4: Will develop positive attitude towards green logistics training.
GREEN LOGİSTİCS	**2. What is green logistics**	2. What is green logistics	6	GLA200: General awareness regarding the most effective ways of improving sustainability represent	KN200/6: Will be able to compare impacts of logistics and green logistics for all components	SK200/6: Find specific solutions for greening logistic system	RA200/6: Ensure proper choice for green logistics activities.

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		2.1 Green logistic and sustainable development	5	main barriers to the 'greening' of the logistics sector	KN200/5: Understands the structure of green logistic concept	SK200/5: Bring green aspect into all the different components of logistics systems	RA200/5: Supervise issues relating to managing green change and how these changes may be successfully managed and effectively monitored.
			4		KN200/4: Knows the key goals of green logistics	SK200/4: Differentiate green logistics, reverse logistics and green supply chain management	RA200/4: Provide basic information about contribution of green logistics to sustainable development.
		2.2 Fields of action, stakeholders and requirements	6	GLA220: A general awareness of the interaction between the most important stakeholders and the framework conditions of green logistic must be created.	KN220/6 List the fields of actions of green logistic:	SK220/6:Interpret the fields of actions	RA220/6: Able to compare different requirements
			5		KN220/5: List the most important stakeholders of green logistic	SK220/5: Chose the most important requirements	RA220/5: Provide information about stakeholders
			4		KN220/4:Identify the requirements of green logistic	SK220/4:Interpret the rule of the stakeholders in green logistics	RA220/4: Able to compare stakeholder interests
COMPONENTS OF GREEN LOGİSTİCS	**3.1 Green transport**	3.1.1 Modal transport	6	GLA311 Will be able to know, analyse and assess the importance of the modal split for planning green transport	KN311/6 Know the modal split in the EU	SK311/6: Chose the most cost-intensive transport modes	RA311/6 Able to compare transport modes concerning cost intensive
			5		KN311/5: List the modes of transport	SK311/5: Chose the modes of transport with the greatest CO2 efficiency	RA 311/5 Able to compare transport modes concerning C02 efficiency
			4		KN311/4: :Understands the influence of modul split for CO2 emissions	SK311/4: Interpret the modal split in the EU	RA311/4 Provide informations about modul split in the EU

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		3.1.2 Technical developments for green transport	6	GLA312 Will be able to know and classify the latest technical development in relation to green transport	KN312/6 Know the latest alternative fuels	SK312/6 Analyse and categorize different road transport fuels	RA312/6 Able to compare different road transport fuels
			5		KN312/5: List the modes of alternative ship transport systems	SK312/5 Interpret the advantage of autonomous driving.	RA312/5 : Implement more environmental different road transport fuels
			4		KN312/4: Understand the advantage of autonomous driving	SK312/4: Analyse and categorize drive system in shipping traffic	RA312/4: Provide information about Aerodynamic factors to reduce air resistance
		3.1.3 Organisational measures for green transport	6	GLA313: Will be able to know and classify the most organizational measures to reduce the consumption of fossil fuels	KN313/6: List the organizational measures to reduce the consumption of fossil fuels	SK313/6: Interpret the advantage of eco drive training	RA313/6: Provide information about using gigaliner
			5		KN313/5: Explain what gig liners are	SK313/5: Interpret the advantage of gigaliners	RA313/5: Organize professional route planing
			4		KN313/4: Understand the importance of route planning for green transport	SK313/4: Chose the most important organizational measures to reduce the consumption of fossil fuels	RA313/4: Provide information about eco drive training
	3.2 Green Warehouse	3.2.1 Macro perspective: Location selection	6	GLA321: Will be able to learn how to use the location selection for green warehousing	KN321/6: List the environmental location criteria	SK321/6: Chose the most important criteria for location selection.	RA321/4: Will develop a benefit analysis for selecting a warehouse location

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			5		KN321/5: Explain the importance of weighting of the criteria for location selection	SK321/5: Interpret the weighting of the criteria for location selection	RA313/5: Organize professional warehouse location selection
			4		KN321/4: Understand the importance of choice location for green warehousing	SK321/4:Interpret the importance of warehouse location for green warehousing	RA321/4: Provide general information about warehouse location selection .
		3.2.2 Micro perspective: Buildings	6	GLA322: Will be able to know the most important factors for an energy-efficient warehouse	KN322/6: List the most important factors for an energy-efficient warehouse	SK 322/6: Chose the most important energy wastage factors for storage equipment.	RA322/6: Provide information about energy wastage factors for storage equipment
			5		KN322/5: List the most important energy consumption factors of a warehouse	SK322/5: Chose the most important energy wastage factors for forklifts	RA322/5: Provide information about important energy wastage factors for forklifts
			4		KN321/4: Understand the importance of energy waste factors for green warehousing	SK322/4: Chose the most important energy wastage factors warehouse building .	RA322/4: Provide information energy wastage factors warehouse building
	3.3 Green packaging	3.3 Green packaging	6	GLA330: Will be able to learn the conditions, specifications, solutions and steps for green packaging and apply them in the logistics sector.	KN330/6: Implement the knowledge about green packaging.	SK330/6: Find specific solutions in regard to green packaging.	RA330/6: Promote, apply and optimize the green packaging systems.
			5		KN330/5: Understand and differentiate key issues in regard to green packaging.	SK330/5: Reflect on the green packaging in the logistics sector.	RA330/5: Supervise green packaging in the logistics system.
			4		KN330/4: Know the purpose of green packaging in logistics sector.	SK330/4: List the possible issues in regard to green packaging system.	RA330/4: Provide general information about green packaging.

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	3.4 Green logistics data collection and management	3.4.1 Seven trends in the green logistics data collection	6	GLA341: Will understand the trends in the green logistics data collection	KN341/6: Explain the main trends in the green logistics data collection	SK 341/6: Interpret the advantage of environmental management systems	RA 341/6: Provide information about the Carbon Controlling system
			5		KN341/5: Explain the Carbon Controlling system	SK 341/5: Analyse and categorize seven trends in the green logistics data collection	RA 341/5: Able to compare seven trends in the green logistics data collection
			4		KN341/4: Explain the objectives of environmental management systems	SK 341/4:Interpret the importance of environmental management systems	RA341/4: With minimal help is able to make a pricing of CO2 emissions
		3.4.2 ISO 140001 Certification	6	GLA342 Will understand the structure of ISO 14001	KN342/6: Explain the Plan do check act cycle	SK 342/6: Interpret the advantages of ISO 14001 management system	RA342/6: With minimal help is able to formulate an environmental strategy
			5		KN342/5: Understand the Concept and approaches of eco-controlling	SK 342/5: Analyse the different approaches of eco-controlling.	RA342/5: Provide information about an EMS according to ISO 14001
			4		KN 342/4: List the different approaches of eco-controlling.	SK 342/4: Analyse the three main reasons for implementing an EMS according to ISO 14001	RA 342/4: Provide information the different approaches of eco-controlling.
		3.4.3 Green target costing	6	GLA343: Will understand the importance of green target costing	KN343/6: Understand the concept of Carbon footprint	SK 343/6: Interpret the concept of Carbon footprint	RA343/6: Provide information about the concept of Carbon footprint

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			5		KN343/5: Explain the concept of key figures in green logistic controlling	SK343/5: List different key figures of green logistic controlling	RA351/5: Able to calculate key figures of green logistic controlling
			4		KN343/4: List three steps for implementing green target costing	SK342/4: Interpret three steps for implementing green target costing	RA351/4: Provide information about the concept green target costing
	3.5 Waste management	3.5.1 General about waste	6	GLA351: Will be able to apply statistical information in the field of waste management.	KN351/6: Implement circular economy in the field of waste management.	SK351/6: Generate the order of waste composition.	RA351/6: With deep understanding is able to read graph and predict measure for problems with waste generation.
			5		KN351/5: Explain the main purpose of circular economy approach.	SK351/5: Name the category of waste that is the most generated.	RA351/5: Able to predict independently measures for problems with waste generation.
			4		KN351/4: Recognise circular economy measure to reduce environmental impacts.	SK351/4: From the graph, identify waste composition order considering to waste generation.	RA351/4: With minimal help is able to make predictions about waste generation.
		3.5.2 Waste generation	6	GLA352: Will be able to recognise categories of waste and apply EU measures in the field of waste management and generation.	KN352/6: Implement EU recommendations for waste management.	SK352/6: Analyse different sources for data and is able to choose the most reliable one.	RA352/6: Able to work independently with different waste categories and with deep understanding and

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							responsibility manage with waste.
			5		KN352/5: To compare different types of waste management with respect to environmental impacts.	SK352/5: Able to compare different sources for data and choose the most reliable one.	RA352/5: Able to work with different waste categories and with understanding and responsibility manage with waste.
			4		KN352/4: To recognise the best way for waste management.	SK352/4: Name the most reliable source for statistics data in the field of waste generation.	RA352/4: Able to autonomous use of recommendation for waste management.
		3.5.3 Waste regulations	6	GLA353: Will be able to apply European legislation in the field of waste management.	KN353/6: To Implement European legislation in the field of waste management.	SK353/6: To generate multiple stages model of waste prevention and management according to European legislation in the field of waste management.	RA353/6: Able to work independently in accordance with European legislation in the field of waste management and with its deep understanding.
			5		KN353/5: To explain European legislation in the field of waste management.	SK353/5: To reflect waste prevention and management according to European legislation in the field of waste management.	RA353/5: Able to work independently in accordance with European legislation in the field of waste management.

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			4		KN353/4: To recall European legislation in the field of waste management.	SK353/4: To apply waste management according to European legislation in the field of waste management.	RA353/4:Able to work with minimal help in accordance with European legislation in the field of waste management.
		3.5.4 EU approach to waste management	6	GLA354: Will be able to consider EU recommendations in waste management.	KN354/6: Understand EU recommendations in waste management.	SK354/6: Organize the process considering the EU recommendations in waste management.	RA354/6: Able to educate himself about EU recommendations in waste management.
			5		KN354/5: Classify task and processes according to EU recommendations in waste management.	SK354/5: Compare different choices to best fit the EU recommendations in waste management.	RA354/5: Able to compare benefits of EU recommendations in waste management.
			4		KN354/4: Recall waste management hierarchy.	SK354/4: Find daily situations that are highlighted in EU recommendations in waste management.	RA354/4: Able to use EU recommendations in waste management.
		3.5.5 Reverse logistics for waste management	6	GLA355: Will be able to describe and/or use Reverse logistic for waste management	KN355/6: Implement the knowledge about reverse logistic.	SK355/6: Find specific solutions in regard to existing delivery services.	RA355/6: Promote and optimize the reverse logistic plan.
			5		KN355/5: Understand and differentiate key issues in regard to existing delivery fleets	SK355/5: Reflect on the reverse logistic application.	RA355/5: Supervise transportation due to the reverse logistic plan.
			4		KN355/4: Know the purpose of reverse logistic of waste management.	SK355/4: List the possible issues in regard to existing delivery system.	RA355/4: Provide general information about reverse logistic.

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		3.5.6 Green supply chain management	6	GLA356a: Will be able to describe and/or use Cost-Benefit Analysis (CBA) as an analytical tool of waste management.	KN356a/6: Implement the knowledge about CBA.	SK356a/6: Find specific solutions for applying CBA.	RA356a/6: Promote and optimize the waste management analyze plan.
			5		KN356a/5: Understand and differentiate between steps of CBA.	SK356a/5: Reflect on the CBA application.	RA356a/5: Ensure a proper choice of steps to analyse waste management and support the process.
			4		KN356a/4: Know the purpose of CBA.	SK356a/4: List the steps of CBA.	RA356a/4: Provide general information about the waste management analyse.
			6	GLA356b: Will be able to describe and/or use Life Cycle Assessment (LCA) as an analytical tool of waste management.	KN356b/6: Implement the knowledge about LCA.	SK356b/6: Find specific solutions for applying LCA or reflect on its application.	RA356b/6: Promote and optimize the waste management analyze plan.
			5		KN356b/5: Understand and differentiate between steps of LCA.	SK356b/5: Reflect on the LCA application.	RA356b/5: Ensure a proper choice of steps to analyse waste management and support the process.
			4		KN356b/4: Know the purpose of LCA.	SK356b/4: List the steps of LCA.	RA356b/4: Provide general information about the waste management analyse.
			6	GLA356c: Will be able to describe and/or use Multi-Criteria Decision Analysis (MCDA) as an analytical tool of waste management.	KN356c/6: Implement the knowledge about MCDA.	SK356c/6: Find specific solutions for applying MCDA or reflect on its application.	RA356c/6: Promote and optimize the waste management analyze plan.
			5		KN356c/5: Understand and differentiate between steps of MCDA.	SK356c/5: Reflect on the MCDA application.	RA356c/5: Ensure a proper choice of steps to analyse waste management and support the process.
			4		KN356c/4: Know the purpose of MCDA.	SK356c/4: List the steps of MCDA.	RA356c/4: Provide general information about the waste management analyse.

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BENEFITS OF GREEN LOGISTICS	**4.1 Environmental benefits**	4.1 Environmental benefits	6	GLA410:Will be able to describe environmental benefits of different components of green logistics	KN410/6: Will be able to reduce long term risks associated to resource depletion, pollution and waste management	SK410/6: Find and promote most environmental friendly solutions	RA410/6: Analyse and evaluate short, medium and long term benefits for sustainability
			5		KN410/5: Differentiate environmental footprint of different modes of logistics	SK410/5: Compare different logistics applications in terms of environmental concern	RA410/5: Organize environmental friendly logistic systems, especially for freight transport
			4		KN410/4: Will be able to explain basic benefits of green logistics	SK410/4: List the advantages/disadvantages of alternative transportation systems, packaging and warehouses	RA410/4: Provide general information about environmental benefits of green logistics
	4.2 Business Benefits for companies	4.2 Business Benefits for companies	6	GLA420: Will be able to identify benefits of green logistics for business	KN420/6: Implement green logistics	SK420/6: Apply the green logistics concept and adding green attributes to their products	RA420/6: Identify and analyse tools available to companies that wants to make companies logistic activities greener
			5		KN420/5: Know how greening logistic operations could enhance business opportunities	SK420/5: The process to critically evaluate technical and managerial issues related to greening logistic system	RA420/5: List the environmental and financial benefits of green logistics
			4		KN420/4: Understand potential advantages for sustainability and cost savings	SK420/4: Find the reasons why companies should choose green logistics	RA420/4: Able to provide general information on benefits of green logistics for companies
	4.3 Benefits of components in green logistics	4.3 Benefits of components in green logistics	6	GLA430: Will be able to sum up benefits of green logistics according to the each components of GL.	KN430/6: Differentiate environmental footprint of different components of green logistics	SK430/6: Ability to identify the underlying assumptions and theoretical differences in green supply chain management and logistics systems.	RA430/6: Analyse and evaluate greening each component in logistic system

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			5		KN430/5: Knows emerging trends in low carbon futures	SK430/5: Find specific solutions for low carbon processes	RA430/5: Find the alternatives for environmental friendly solutions
			4		KN430/4: Will be able to explain basic benefits of each component in green logistics	SK430/4: List the benefits of each component of logistics	RA430/4: List the environmental and economic benefits from each part of logistic system
URBAN LOGISTICS	**5.1 EU polices & directives**	5.1 EU polices & directives	6	GLA510: Will be able to know & understand what is urban logistics.	KN510/6: Know and understand the introduction of the urban logistics.	SK510/6: Know, understand & judge on the meaning & aims of urban logistics.	RA510/6: Able to comment & judge on the meaning, aims of the urban logistics.
			5		KN510/5: Explain what is Urban Logistics.	SK510/5: Reflect the meaning & aims of urban logistics.	RA510/5:Able to define the urban logistics & its aims.
			4		KN510/4: Know the meaning of Urban Logistics.	SK510/4: Understand the introduction & aims of urban logistics.	RA510/4:Able to comment on the meaning & aims of urban logistics.
	5.2 Main problems in urban logistics	5.2 Main problems in urban logistics	6	GLA520: Will be able to know & apply the European Union policies & directives in urban logistics.	KN520/6: Implement European Union policies & directives in the field of Urban Logistics.	SK520/6: Know the rules of application in European Union policies & directives in urban logistics.	RA520/6: Able to apply the directives & policies European Union policies & directives in urban logistics & supply green logistics in the system.
			5		KN520/5: Explain European Union policies & directives in the field of Urban Logistics.	SK520/5: Reflect the rules of European Union policies & directives in the field of urban logistics.	RA520/5:Able to work independently in accordance with European Union policies & directives in the field of urban logistics.
			4		KN520/4: Know the European Union policies & directives in the field of	SK520/4: Apply the rules of European Union policies & directives in the	RA520/4:Able to work with respect to European Union policies &

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					Urban Logistics.	field of urban logistics.	directives in the field of urban logistics.
	5.3 Solutions for the problems of urban logistics	5.3 Solutions for the problems of urban logistics	6	GLA530: Will be able to learn, understand & solve the problems in urban logistics & be able to supply green urban logistics.	KN530/6: Know the problems & search for the solutions of the problems in green urban logistics.	SK530/6: Understand the main problems in green urban logistics & know how to prevent them.	RA530/6: Making a thorough analysis of the main problems encountered in urban logistics & search for the answers.
			5		KN530/5: Understand and differentiate the problems in green urban logistics.	SK530/5: Know & understand the main problems in green urban logistics.	RA530/5: Understand the main problems encountered in urban logistics & search for the answers.
			4		KN530/4: Know the problems in the green urban logistics.	SK530/4: List the main problems in green urban logistics.	RA530/4: Give general information about the main problems in green urban logistics.
	5.4 Elements of urban logistics	5.4 Elements of urban logistics	6	GLA540: Will be able to know the Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.	KN540/6: Implement the knowledge about Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.	SK540/6: Implement and apply Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.	RA540/6: Promote and optimize the Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.
			5		KN540/5: Understand and comment on the Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.	SK540/5: Reflect on the Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.	RA540/5: Ensure a proper choice of solutions for the Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.
			4		KN540/4: Know the Environmental Goals in	SK540/4: List and judge on the Environmental	RA540/4: Provide information about the

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					Urban Logistics & derive other goals for the improvement of logistics in the cities.	Logistics & derive other goals for the improvement of logistics in the cities.	Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.
	5.5 Environmental goals in urban logistics	5.5 Environmental goals in urban logistics	6	GLA550: Will be able to develop innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.	KN550/6: Implement the knowledge about the development of innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.	SK550/6: Application of the development of the innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.	RA550/6: Know, implement & make awareness of the development of the innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.
			5		KN550/5: Understand and differentiate between steps of development of innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.	SK550/5: Make application on the development of innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.	RA550/5: Ensure a proper choice of the development of innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.
			4		KN550/4: Know the purpose of the development of innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.	SK550/4: List & know the elements of the development of innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.	RA550/4: Provide information about the development of innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics.

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3.1 GREEN LOGISTICS ABILITIES ACQUISITION

Participants of the Green Logistic courses are be able to acquire individual Blended Learning Course (BLC) by choosing desired Green Logistic Ability (GLA) they need to acquire. The available GLAs are specified in the Table 4 with its code and description. Each GLA has its own predicted duration of learning process needed which is specified next to the description of the GLA in the same cell of the Table 4. The durations of selected GLAs are summarized and converted (according to eq. 3.1, where the t_{GLAi} is the duration of selected GLA) into European Credit points (EC) which are presented in the headings of Table 4 for each BLC.

$$EC = \left\lfloor \frac{\sum_{i}^{i \in sel.} t_{GLA_i}}{20h} \right\rfloor$$

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The participant can also acquire a different EQF level. One can choose between: EQF level 4, 5 or 6 and this is specified as a corresponding number in a cell of chosen GLA.

Indiviudal competency profiler is also available at:
https://docs.google.com/spreadsheets/d/1YInvQ6JUCI933TZoNFegjRdfBbR0rMM4CDswuogKsVI/edit?usp=sharing

Table 4: Green logistics abilities acquisition.

	Steps of Green logistics abilities acquisition											
Total European Credit points of BLC:	**2**	**3**	**2**	**2**	**1**	**3**	**2**	**2**	**2**	**2**	**2**	**3**
Green Logistics abilities **GLA code : Description.** **Duration : Hours of blended learning process.**	**BLC1**	**BLC2**	**BLC3**	**BLC4**	**BLC5**	**BLC6**	**BLC7**	**BLC8**	**BLC9**	**BLC10**	**BLC11**	**BLC12**
GLA100: Will be able to know what logistics is and understand the core elements of logistics. Duration : 8 h.	**4**	**6**		**5**	**4**	**5**	**4**	**5**	**5**	**4**		**5**
GLA110: Will be able to classify types of logistics and make use of each of them. Duration : 3 h.		**5**				**5**						
GLA111: Will be able to know and classify impacts of transportation on different components of environment and climate change. Duration : 9 h.				**4**		**6**		**4**				
GLA112: Will be able to know, analyse and assess the environmental impacts of warehouses. Duration : 3 h.	**5**								**6**			

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GLA113: Will be able to categorize the wastes from packaging and assess the impacts on environment (air, water, soil, etc.). Duration : 5 h.									**4**			
GLA120: Will understand the necessity for green logistics. Duration : 10 h.				**5**	**5**		**6**					**5**
GLA200: General awareness regarding the most effective ways of improving sustainability represent main barriers to the 'greening' of the logistics sector. Duration : 20 h.		**6**				**5**	**5**			**6**		**5**
GLA220: A general awareness of the interaction between the most important stakeholders and the framework conditions of green logistic must be created. Duration : 20 h.						**5**						
GLA311: Will be able to know, analyse and assess the importance of the modal split for planning green transport . Duration : 7 h.		**5**		**6**	**6**			**5**		**4**		
GLA312: Will be able to know and classify the latest technical development in relation to green transport. Duration : 13 h.					**5**	**5**	**5**					
GLA313: Will be able to know and classify the most organizational measures to reduce the consumption of fossil fuels. Duration : 20 h.				**5**	**5**	**5**		**5**				
GLA321: Will be able to learn how to use the location selection for green warehousing. Duration : 20 h.				**6**		**4**			**5**	**5**		

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GLA322: Will be able to know the most important factors for an energy-efficient warehouse. Duration : 20 h.	**6**	**6**	**5**				**5**		**5**			
GLA330: Will be able to learn the conditions, specifications, solutions and steps for green packaging and apply them in the logistics sector. Duration : 5 h.			**4**						**4**			**5**
GLA341: Will understand the trends in the green logistics data collection. Duration : 10 h.				**6**	**6**		**5**					
GLA342: Will understand the structure of ISO 14001. Duration : 15 h.	**5**				**6**		**4**					
GLA343: Will understand the importance of green target costing. Duration : 15 h.	**5**	**6**				**5**						
GLA351: Will be able to apply statistical information in the field of waste management. Duration : 5 h.			**6**	**5**	**5**							
GLA352: Will be able to recognise categories of waste and apply EU measures in the field of waste management and generation. Duration : 5 h.							**5**					
GLA353: Will be able to apply European legislation in the field of waste management. Duration : 6 h.	**4**	**5**	**6**				**5**					**6**

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GLA354: Will be able to consider EU recommendations in waste management. Duration : 8 h.				**5**								**6**
GLA355: Will be able to describe and/or use Reverse logistic for waste management Duration : 8 h.			**6**			**5**						**6**
GLA356a: Will be able to describe and/or use Cost-Benefit Analysis (CBA) as an analytical tool of waste management. Duration : 3 h.										**5**		
GLA356b: Will be able to describe and/or use Life Cycle Assessment (LCA) as an analytical tool of waste management. Duration : 3 h.										**5**		
GLA356c: Will be able to describe and/or use Multi-Criteria Decision Analysis (MCDA) as an analytical tool of waste management. Duration : 2 h.					**5**					**5**		
GLA410: Will be able to describe environmental benefits of different components of green logistics Duration : 5 h.	**6**	**5**				**6**				**5**		
GLA420: Will be able to identify benefits of green logistics for business. Duration : 8 h.	**6**	**4**	**6**									
GLA430: Will be able to sum up benefits of green logistics according to the each coponents of GL. Duration : 17 h.		**5**							**5**			

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GLA510: Will be able to know & understand what is urban logistics. Duration : 5 h.	**6**							**5**	**5**		**6**	
GLA520: Will be able to know & apply the European Union policies & directives in urban logistics. Duration : 4 h.	**6**						**5**				**6**	
GLA530: Will be able to learn, understand & solve the problems in urban logistics & be able to supply green urban logistics. Duration : 18 h.	**6**							**5**		**5**	**5**	
GLA540: Will be able to know the Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities. Duration : 9 h.			**6**			**5**					**4**	
GLA550: Will be able to develop innovative ways for the vehicles in the delivery systems & make use of these benefits in green logistics. Duration : 4 h.		**5**									**6**	

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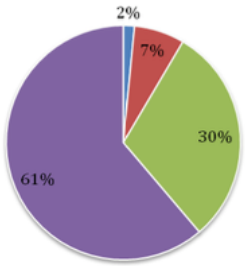
3.2 LOG IN GREEN TEST ITEMS FOR CERTIFICATION

Area	Modules	Units of Learning Outcomes	EQF level	Green logistics ability (GLA)	Learning outcomes		
					Knowledge	**Skills**	**Responsibility and Autonomy**
LOGİSTİCS	**1. Basic knowledge about logistics**	1. Basics about logistics	6	GLA100: Will be able to know what logistics is and understand the core elements of logistics.	KN100/6: A characteristic of logistics is _____(A-D), and the national logistic infrastructure consist of _____ (I-IV) A. To ensure that workers and the director find a good agreement for transportation of goods. B. To be sure that everything works efficiently. C. **To ensure that goods arrive in adequate conditions**. D. To get the better prize for raw materials. I. The set of transportation modes at European level.	SK100/6: The responsibilities of a logistician are A. **Primary role of a logistician is to manage the supply chain, transportation and storage of material and transportation management**. B. As engineer he/she must take care of all processes in the company. C. The only responsibility is transportation management. D. Primary and unique role of a logistician is to manage the supply	RA100/6: The graph shows the length of different roads. Which is the corresponding of each one:  M =Motorways N=Main National roads S=Secondary or regional roads O=Others A. **2% M-7% N-30% S-61% O**

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					II. **A nation's air, motor, rail, and shipping systems**. III. The infrastructure of workers in a private company. IV. The well-known pyramidal work in an efficient company.	chain, together with all workers.	B. 2% N-7% S-30% O-61% M C. 2% S-7% N-30% M-61% O D. 2% O-7% M-30% N-61% S
			5		KN100/5: What is cycle time? A. **The time consumed to get and order from order entry to the shipping dock**. B. The time to finish a product. C. Free time for logistics employees. D. The time consumed to load a truck depending on truck capacity and arrival time.	SK100/5: Logistics core elements include different services or activities: Customer services, order processing, transportation and A. **Customer services, order processing, transportation and Inventory management**. B. Customer services, order processing, transportation and supply chain. C. Supply chain, order processing, transportation and workers. D. Customer services, order processing, workers and Ports.	RA100/5: The national logistics infrastructure consists of: A. The set of transportation modes at European level. B. **A nation's air, motor, rail, and shipping systems**. C. The infrastructure of workers in a private company. D. The well-known pyramidal work in an efficient company.

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			4		KN100/4: There are five basic modes of transportation: rail, truck, air, pipeline, and A. By highway. B. On foot. C. Product launch. D. **Ship**.	SK100/4: Logistics core elements include different services or activities: Customer services, order processing, transportation and A. **Inventory management**. B. Supply chain. C. Workers. D. Ports.	RA100/4: The greatest length on the roads corresponds to: A. Motorways. B. Main National roads. C. Secondary or regional roads. D. **Others.**
			6	GLA101: Will be able to classify types of logistics and make use of each of them.	KN101/6: What are the important aspects of transportation and fleet management? A. Partial instead of a full truck load. B. **Transport Planning**. C. To work together with co-workers. D. **Fleet maintenance and Scheduling**.	SK101/6: The quality to manage the flow of goods and services can be described using the seven rights: A. The right product to the right customer at the right place, in the right condition and right quantity at the right time, at the right distributor. B. **The right product to the right customer at the right place, in the right condition and right quantity at the right time, at the right cost**.	RA101/6: Type and size of packaging, vehicles in which it is transported, areas where it is distributed are the responsible of: A. Logistic management, B. provisioning logistics, C. storage logistics, D. production logistics, **E. distribution logistics,** F. reverse logistic.

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	C. The right 7 distribution centres. D. The right product distributed by the 7 right companies in Europe.		
5	KN101/5: According to the stage of the production process, we can classify logistics into four different sections: Storage, production, distribution, and A. Reverse logistics. B. **Provisioning logistics**. C. Green logistics. D. Sustainability.	SK101/5: Among the main tasks attributable to production logistics are: A. Update inventories; record of the place where they are stored, plan the storage areas according to the type of product, facilitate the incorporation of supplies to the production process. B. Inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfilment, logistics network design, inventory management, supply–demand planning, and management of third-	RA101/5: Among the main tasks attributable to production logistics are: A. Type and size of packaging, vehicles in which it is transported, areas where it is distributed. B. Update inventories, record of the place where they are stored, plan the storage areas according to the type of product., facilitate the incorporation of supplies to the production process. C. **Transform products; transport the intermediate products to the next phase of transformation; ensure that the transformation**

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						party logistics services providers. C. **Transform products; transport the intermediate products to the next phase of transformation, ensure that the transformation following the quality standards., prepare the final product to be distributed.** D. Update inventories, record of the place where they are stored, plan the storage areas according to the type of product, facilitate the incorporation of supplies to the production process.	**following the quality standards., prepare the final product to be distributed.** D. Choose providers., ensure that deadlines are met, inventory management., analyse the production needs of the company, study the trends of the items that are purchased, ensure the quality of provisions.
			4		KN101/4: Reverse logistics is responsible for returning the products that customers return. A. **True** B. False	SK101/4: Some types of logistics are: A. Travel logistics, road logistics, transportation planning, reverse logistic.	RA101/4: Production logistics: Ensures that the raw materials or supplies pass from one phase to another of the transformation until the end of the product. A. **True**

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						B. Logistic management, provisioning logistics, road logistics, transportation planning. C. Production logistics, distribution logistics, reverse logistic, travel logistic. D. **Logistic management, provisioning logistics, storage logistics, production logistics, distribution logistics, reverse logistic.**	B. False

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	1.1 Impacts of logistics	1.1.1 Impacts of transportation	6	GLA111:Will be able to know and classify impacts of transportation on different components of environment and climate change.	KN111/6: Fortunately, transportation has no direct negative impacts on ____(A-D) __. However, three direct greenhouse gases, namely; (____I-IV___) are produced due to transportation activities. *(complete with the appropriate words).* A. Biosecurity B. Noise pollution C. Water pollution **D. Land use** I. Carbon dioxide (CO_2), sulphur dioxide (SO_2), and nitrous oxide (N_2O) II. Carbon dioxide (CO_2), methane (CH_4), and nitrogen dioxide (NO_2) **III. Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)** IV. Carbon dioxide (CO_2), sulphur dioxide (SO_2), and nitrogen dioxide (NO_2)	SK111/6: Energy intensity for each mode of transport, direct GHG emissions is NOT directly related to; A. Engine design efficiency. B. Driver behaviour during operation. **C. State of the economy.** D. Vehicle design efficiency.	RA111/6: How do you deal to reduce greenhouse gas emissions from transportation and to minimize your company's contribution to climate change? A. Optimizing activity by adjusting total passenger-km/yr or freight tonne-km/yr. B. Increasing awareness of drivers on climate change. C. Using different transport fuels such as electricity and hydrogen. **D. All of the above.**

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			5		KN111/5: What is the percentage of carbon dioxide emissions from transportation activities in EU? A. 5 % **B. 10 %** C. 30 % D. 50 %	SK111/5: The ecological effect of transportation includes mostly_____(A-D)____ mostly; **A. Creation of creation of suitable areas for species.** B. Degradation of priority habitats. C. Creation of barriers to the movement and genetic interchange between populations. D. All of the above.	RA111/5: Regular movement of trucks and heavy traffic may cause _____(A-D) _____. *(complete with the appropriate words).* A. Damage the structure of the soil. **B. High circulation of water and oxygen.** C. Biosecurity problems D. Expansion of invasive species.
			4		KN111/4: Which mode of transportation has the lowest environmental impact? **A. Road** B. Aviation C. Shipping D. Railways	SK111/4: Green Transportation helps to: A. Decrease in carbon footprint. B. Satisfaction of social needs of drivers. **C. Development of pooling and hiring system.** D. Increase competitiveness.	RA111/4: Which of the followings is NOT one of the diseases originating from the pollutants from transportation depending on short or long-term exposures? A. Cancer **B. Multiple sclerosis** C. Respiratory problems D. Neurotoxic effects
		1.1.2 Impacts of Warehouses	6	GLA112: Will be able to know, analyse and assess the environmental impacts of warehouses	KN112/6: Warehouses cause various impacts on nature and people such as _____(A-D)_____ through	SK112/6: Warehouses require a significant amount of energy like electricity consumption of goods storage, due to	RA112/6: The figure below shows the methodology to assess the environmental impact of

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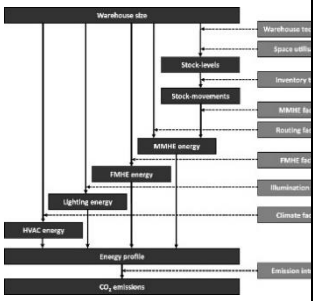
					_____(I-IV)_____. *(complete with the appropriate words).* **A. Decrease in biodiversity.** B. Increase in ecosystem services. C. Habitat gain. D. Decrease in health impacts of waste. I. Efficient energy use. II. Effective waste management. **III. Atmospheric emissions.** **IV.** Keeping inventory levels at minimum.	_____(A-D) ____ as well as _____(I-IV) _____. *(complete with the appropriate words).* A. lighting, cooling and air condition B. heating and cooling **C. lighting, heating, cooling and air condition** D. stock levels I. Mobile material handling equipment. II. Fixed material handling equipment. **III. Fixed and mobile material handling equipment.** IV. None of the above.	warehousing. According to the figure below which factors do not have direct impacts on environment (A-D) and what measures will be needed for the future (I-IV)?  https://www.tandfonline.com/doi/full/10.1080/00207543.2016.1211342?scroll=top&needAccess=true A. Use of energy B. Traffic and congestion C. Land use **D. Groundwater pollution** I. Eco-friendly warehouse design.

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					II. Creating sustainable workplace for employees. **III. Decreasing the warehouse size.** IV. Efficient heating and lighting systems
	5		KN112/5: Which of the following is **not** one of the negative impacts of warehouses on people and nature? A. Hazardous wastes. B. Carbon emissions. C. Noise pollution. **D. Excess water consumption.**	SK112/5: Which of the following impacts **are not** observed with the excessive development of warehouse systems? A. Noise pollution. **B. Methane emissions.** C. Stress on flora and fauna. D. Traffic jam around.	RA112/5: Negative impacts of warehouses will be reduced by; **A. Increase the size of warehouses.** B. Increase the amount of renewable energy used. C. Increase energy-efficient heating and lighting systems. D. Decrease the use of fluorinated gases for refrigeration.
	4		KN112/4: Which measures could be taken for the prevention of negative impacts of warehouses? A. Efficient energy use. B. Effective waste management.	SK112/4: Which factors might not be taken into account for eco-friendly warehouse design? A. Use of energy. **B. Located in city centres.** C. Use of recycled construction materials.	RA112/4: As a result of eco-friendly warehouse design; A. Energy costs will be minimized. **B. Distribution costs will be minimized.** C. CO_2 emissions will be minimized.

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					C. Use of eco-friendly materials. **D. All of the above.**	D. Creating sustainable workplace for employees.	D. The amount of waste will be reduced.
		1.1.3 Impacts of Packaging	6	GLA113: Will be able to categorize the wastes from packaging and assess the impacts on environment (air, water, soil, etc.)	KN113/6: Conventional packaging materials are generally_____(A-D) ____ These materials pose some threats to the environment such as _____(I-V) _____. *(complete with the appropriate words).* **A. Cheap** B. Reusable C. Refillable without washing D. Recoverable I. Air pollution II. Clogging up landfills as well as streams, rivers and oceans III. Water pollution **IV. All of the above**	SK113/6: Incineration of the packaging materials cause; (I) produce detrimental substances (for instance, dioxin) (II) pollute groundwater (III) land occupancy (IV) pollution on soil A. (I), (II), (III) **B. (I), (II), (IV)** C. (I), (III), (IV) D. (II), (III), (IV)	RA113/6: Which of the following statements are correct while assessing if your packaging materials are waste or not? (1) If the packaging is NOT "returnable, reusable packaging" it is not waste (2) If the packaging is "empty and residue-free" it is non-hazardous waste packaging (3) If the packaging is NOT 'effectively empty it is not waste packaging, classified on the basis of contents (4) If the residue is NOT hazardous, classified as non-

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							hazardous waste packaging A. (1), (2), (3) **B. (2), (3), (4)** C. (1), (2), (4) D. All are correct
			5		KN113/5: The heating of raw materials to produce plastic packaging emits specifically_____(A-D) ____ and other greenhouse gases, contributing to climate change because, aside from the plasticizers, additives and other pollutants released during _____(I-IV) _____. *(complete with the appropriate words).* A. Particular Materials B. Water vapor C. Halogens **D. Carbondioxide** I. Manufacturing of plastics II. Incineration of plastics III. Transportation IV. **All of the above**	SK113/5: Packaging materials are considered as waste if: A. Is not reusable. B. requires treatment other than simple rinsing to remove chemical residues. **C. Is 'effectively empty'.** D. Is damaged and requires repair before it can be re-used.	RA113/5: Which factors do you take into consideration to fulfil the requirements specific to the recoverable nature of packaging according to Directive 94/62/EC? **A. Recoverable in the form of composting.** B. Recoverable in the form of incineration. C. Having maximum inferior calorific value to allow optimization of energy recovery. D. All of the above.

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			4		KN113/4: Which one of the followings is NOT one of the problems caused by packaging materials in aquatic and terrestrial ecosystems? A. Ingested by a wide range of organisms and may cause adverse physical effects. **B. Ozone depletion.** C. Plastic particles breaking down into nano-sized particles may also impact the bottom of the food web. D. Climate change.	SK113/4: Conventional packaging materials pose some threats to the environment such as: A. Air pollution. B. Clogging up landfills as well as streams, rivers and oceans. C. Water pollution. **D. All of the above.**	RA113/4: Which one of the following is done for re-use? **A. Simple washing and refilling.** B. Treatments to remove chemical residues. C. Remanufacturing (e.g. rebottling). D. Pre-processing before refilling.
	1.2. Need for green logistics	1.2.Need for green logistics	6	GLA120: Will understand the necessity for green logistics.	KN120/6: Common properties of LOGISTIC sector among all countries are; A. Very important for economic development; demand is increasing, majority is based on road transportation, has impact on environment. B. Very important for economic development; demand is decreasing, majority is based on road transportation, has impact on environment.	SK120/6: Green logistics employees should have the knowledge of ____(A-D) _____for _____(I-IV) _____. *(complete with the appropriate words).* **A. Reverse logistics** B. Municipal waste transport C. Conventional packaging D. Water footprint I. National development **II. Sustainable development**	RA120/6: Your logistic company decided to move towards green logistic implementations in the next 6 months. However, there are some barriers to achieve this target in this short period. Which of the followings is NOT one of these barriers? A. Lack of qualified personal B. Weak R&D system **C. Regulatory measures** D. Higher investment costs

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					C. Very important for economic development; demand is increasing, majority is based on road transportation, has impact on environment. D. Very important for economic development; demand is increasing, majority is based on railways, has impact on environment.	III. Increased income IV. All of the above.	
			5		KN120/5: Green logistics employees should have the knowledge of ____(A-D) _____. *(complete with the appropriate words).* A. Green packaging, green transportation, hazardous waste transport, green warehouses. B. Green packaging, green transportation, municipal waste transport, green warehouses **C. Green packaging, green transportation, hazardous waste transport, green**	SK120/5: Which one of the followings is NOT one of the factors affecting green logistics applications? A. Increasing importance of green investments, B. Prestigious C. Regulatory measures **D. Low investment costs**	RA120/5: The entire logistic process is under the pressure of ____(A-D) _____, which dictates the creation of comprehensive green logistic platforms. *(complete with the appropriate words).* A. Lack of qualified personal B. High investment costs C. Lack of comprehensive logistics strategy **D. Green thinking**

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					warehouses, reverse logistics. D. Green transportation, hazardous waste transport, green warehouses, reverse logistics.		
			4		KN120/4: Which one of the followings is NOT a benefit obtained by getting into 'green logistics'? A. Reduction in CO_2 emissions B. Significant cost savings **C. Low supply chain optimization** D. Boosted business performance	SK120/4: Green logistics employees should have the knowledge of ____(A-D) _____. *(complete with the appropriate words).* **A. Reverse logistics** B. Municipal waste transport C. Conventional packaging D. Water footprint	RA120/4: There is a need for updated and enriched curricula about green logistics to; A. have deep knowledge of marketing B. **deep knowledge of sustainable energy** C. have deep knowledge of protected areas D. have deep knowledge of green production
GREEN LOGİSTİCS	**2. What is green logistics**	2. What is green logistics 2.1 Green logistic and sustainable development	6	GLA200: General awareness regarding the most effective ways of improving sustainability represent main barriers to the 'greening' of the logistics sector	KN200/6: While implementing green logistics, which one of the followings will be NOT supported for social (A-D) and economic dimensions (I-IV) respectively? A. Better working conditions B. Decrease in no of accidents **C. Decline in renewable energy usage**	SK200/6: The term *green logistics* is often used interchangeably with *reverse logistics*, but it should be clearly distinguished that; green logistics includes logistics activities that are first motivated by _____(A-D) ____while _____(I-IV) _____ is considered first in reverse logistics. A. Product returns	RA200/6:Before deciding to switch to green logistics, how your company and you would like to analyse the decision making by several criteria. How will you deal with situation ? Which of the following is true? I. I ask questions concerning the materials that we supply

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					D. Respect legislations I. Optional routes **II. Reducing GHG** III. Reducing energy usage IV. Reducing wastes produced	**B. Air pollution and noise reduction** C. Marketing returns D. Secondary markets I. Product returns II. Marketing returns III. Secondary markets **IV. Packaging reduction**	II. I ask questions concerning the quantity or type of waste we produce III. I check the materials we use pose any danger to the environment, staff or beneficiaries IV. I check if my organisation operating the most cost-effective method of controlling or eliminating pollution risk V. I check my employees professions VI. I ask what will be our economical gain A. (I), (II),(III),(IV),(VI) **B. (I), (II),(III),(IV),(V)** C. (I),(III),(IV),(V),(VI) D. (I), (II),(IV),(V),(VI)
			5		KN200/5: Which one of the following statements is correct? **A. Green logistics is the part of 'green supply chain management'.**	SK200/5: Which of the followings is **NOT** one of the common goals of *green logistics* and *reverse logistics*? A. Recycling	RA200/5: What do you tell to your manager to convince him to switch from conventional logistics to green logistics? A. We as a company will protect environment

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					B. 'Green logistics' and 'green supply chain management' are totally different concepts. C. 'Green logistics' and 'green supply chain management' are same concepts. D. 'Green supply chain management' is the part of green logistics.	B. Remanufacturing **C. Marketing returns** D. Reusable packaging	B. Our market occupancy will expand C. We will meet and satisfy customer needs **D. All of the above**
			4		KN200/4: Green logistics can be defined as "producing and distributing products in an environmentally friendly way, considering _____ factors together" from the sustainable development point of view. *(complete with the appropriate words)* **A. Environmental and social** B. Environmental, social and economical C. Environmental D. None	SK200/4: What are the tools used to measure environmental effectiveness of green logistics? A. Ecological footprint B. ISO 14000 certification **C. Environmental Impact Assessment** D. Life Cycle Assessment	RA200/4: Green supply chain management addressees respect and integration of environmental management within supply chain management to minimize the impact of the activities' negative externalities. At this stage, companies recognize and consider in their policies and mode of functioning, impacts of extraction of raw materials, manufacturing, distribution and other operational process through the supply chain on the environment. Select one of the missing possible key issue for companies to consider in their functions:

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							A. Increase costumer awareness **B. Transportation** C. Maximize the impact of the activities' negative externalities D. All of the above
		2.2 Fields of action, stakeholders and requirements	6	GLA220: A general awareness of the interaction between the most important stakeholders and the framework conditions of green logistic must be created.	KN220/6: List climate-changing gases. **CO_2** **CH_4** **N_2O** **F-gases**	SK220/6: Global warming is mainly caused because of: **Greenhouse gases from the use of fossil fuels for transport, buildings, agriculture, energy and industry.**	RA220/6: Who are the most important stakeholders for driving development in green logistics further? **politics, companies, society, customers**
			5		KN220/5: List at least two climate-changing gases. **CO_2** **CH_4**	SK220/5: Greenhouse gases from the use of ____(A-D)___ fuels for transport, buildings, agriculture, energy and industry are mainly responsible for global warming. A. bio **B. fossil** C. alternative D. hydrogen	RA220/5: List at least four opportunity from green logistics. • **Efficient use of resources (cost savings)** • **Consideration of ecological action as a differentiation strategy** • **Sustainability strategies as a corporate goal** • **Improvement of transparency in the supply chain**

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			4		KN220/4: Which is not climate-changing gas? **A. O_2** B. CO_2 C. N_2O D. CH_4	SK220/4: Greenhouse gases from the use of fossil fuels for transport, buildings, agriculture, energy and industry are mainly responsible for global warming. **A. True** B. False	RA220/4: What is an opportunity from green logistic? **A. Efficient use of resources (cost savings).** B. Implementation of Green logistics is not possible at all hierarchical levels. C. Benefits of Green lohistics investments difficult to measure. D. Long-lasting implementation process.
COMPONENTS OF GREEN LOGİSTİCS	**3.1 Green transport**	3.1.1 Modal transport	6	GLA311: Will be able to know, analyse and assess the importance of the modal split for planning green transport	KN311/6: Name the module split for rail transport in the EU! **16-20%**	SK311/6: Rank the modes of transport according to their cost, starting with the lowest cost. **Air 4** **Water 1** **Road 2** **Rail 3**	RA311/6: Which of these modes of transport is more cost effective? A. Aviation. **B. Road.**
			5		KN311/5: List the traffic carriers according to the module split starting from the highest to the lowest! **roads (1)** **rails (2)** **water (4)** **air (3)**	SK311/5: Rank the transport modes according to CO_2 efficiency, starting with the least efficient. **Air 1** **Water 4** **Road 2** **Rail 3**	RA311/5 Which of these transport modes has a higher CO_2 efficiency? A. Aviation. **B. Road.**

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			4		KN311/4: Which mode of transport produces the most CO_2 overall? **E. Road traffic** F. Rail transport G. Air traffic H. Maritime transport O Share of rail transport in total transport volume I. Share of air transport in total traffic	SK311/4: The module split in road transport in the EU is constantly increasing! **A. True** B. False	RA311/4: The modal split is the result of the mobility behaviour of people and the economic decisions of companies on the one hand and the transport offer on the other. **C. True** D. False
		3.1.2 Technical developments for green transport	6	GLA312 Will be able to know and classify the latest technical development in relation to green transport	KN312/6: Alternative fuels: This technology has been continuously developed and today natural gas cars are produced in two designs as _____ or _____ **monovalent or bivalent**	SK312/6: Electricity as an alternative form of energy is currently a sensible alternative for long distance trucking? A. True **B. False**	RA312/6: A transport company is considering using an electronically operated truck instead of a diesel-powered truck for long-distance transport. What are the arguments in favour of the investment? _____ ▪ **too few e-petrol stations** ▪ **too small a range** ▪ **battery disposal costs** ▪ **life cycle assessment of an accumulator**

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	5		KN312/5: The sail rotor technology works with which effect? A. Minus B. Plus **C. Magnus** D. Mignus	SK312/5: Besides avoiding traffic jams, the reduction of ____ is the biggest advantage of autonomous driving. **CO_2**	RA312/5: For which field of application is a self-propelled all-electric and autonomous electric truck suitable? A. Long distance B. **Local transport**
	4		KN 312/4 The advantage of autonomous driving is among other things the avoidance of traffic jams? **A. True** B. False	SK312/4: What is the biggest disadvantage of the alternative forms of propulsion in shipping? The biggest disadvantage is the dependence on _____ **(wind)**.	RA312/4: What percentage is the influence of aerodynamics on fuel consumption? _____ **(40%)**
3.1.3 Organisational measures for green transport	6	GLA313: Will be able to know and classify the most organizational measures to reduce the consumption of fossil fuels	KN313/6: List the organizational measures to reduce the consumption of fossil fuels. _____ ▪ **Eco drive** ▪ **Optimal use of loading space** ▪ **route planning**	SK313/6: What is the advantage of eco drive training? **eco-driving can reduce fuel consumption by up to 20%, in practice the effect is around 7%**	RA313/6: Giga Liners have the following criteria _____. ▪ **20-25 meters** ▪ **max 60 tons**

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			5		KN313/5: The Gigaliner is a truck with a total length of 20 metres. This has the possibility to transport a total ton weight of maximum 40 tons. A. True **B. False**	SK313/5: What is the main advantages of gigaliners? **More loading capacity**	RA313/5 : Route planning mainly used factors like _____ (**route optimization)**
			4		KN313/4: Route planning is a method to achieve CO_2 efficiency by which factor? A. Minimization of traffic jam **B. Minimization of the driven kilometers** C. Minimization of the driving time	SK313/4: Chose the most important organizational measures to reduce the consumption of fossil fuels A. Eco drive **B. Optimal use of loading space** C. route planning	RA313/4: What does eco drive training means? Eco drive trainings influence the driver to a defensive driving style **A. True** B. False
	3.2 Green Warehouse	3.2.1 Macro perspective: Location selection	6	GLA321: Will be able to learn how to use the location selection for green warehousing	KN321/6: List the environmental location criteria of warehouse location ▪ labour market ▪ transport routes ▪ Proximity to suppliers ▪ Proximity to sales market ▪ quality of life	SK321/6: Which factors are particularly important when choosing the location of a green warehouse? _____ – **Kilometre minimisation**	RA321/4: Name factors for the location selection of a green ware house! _____ ▪ Mileage optimization to the customer ▪ Mileage optimization to the supplier ▪ Location with low land wastage

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				▪ Tax burden		▪ Site with low load for waste water
		5		KN321/5: The weighting of the factors is not important because all factors have the same importance A. True B. **False**	SK321/5: The weighting of the factors for the selection of a storage must equal 100? **A. True** B. False	RA313/5: The factors of the choice of location of a green warehouse must be weighted with 100 in total? **A. True** B. False
		4		KN321/4: The choice of a warehouse location influences the minimization of routes to suppliers and customers. **A. True** B. False	SK321/4: Why is it important to weight the factors in the choice of location? _____ **Because not all factors are equally important**	RA321/4: Do the factors for the choice of location of a green warehouse have to be weighted differently? **A. True** B. False
	3.2.2 Micro perspective: Buildings	6	GLA322: Will be able to know the most important factors for an energy-efficient warehouse	KN322/6: List the most important factors for an energy-efficient warehouse. ▪ **heating** ▪ **light** ▪ **cooling**	SK322/6: Name the most important energy wastage factors for storage equipment. **Are windows and doors close correctly**	SK322/6: List the important energy wastage factors for storage equipment. ▪ **Are windows and doors close correctly?**

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						▪ **Are the doors between different climate zones working properly?** ▪ **Are all insulation materials on walls and ceilings in orde** ▪ **Is the door only opened when the truck is standing in front of it?**
			5		KN322/5: List the most important energy consumption factors of a warehouse beginning with the highest. ▪ **heating** ▪ **light** ▪ **cooling**	SK322/6: Name the most important possibility to reduced energy consumption for forklifts **brake energy recovery systems**	SK322/6: Name the important possibility to reduced energy consumption for forklifts ▪ **brake energy recovery systems** ▪ **recovery systems during loading**
			4		KN322/4: What is the most important factor for energy consumption in a warehouse? **A. Heating** B. Cooling	SK322/4: Chose the most important energy wastage factors warehouse building. **A. Heating** B. Cooling	RA3222/4: Name important factors for energy consumption in a warehouse ▪ **Heating** ▪ **Cooling**

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				C. Light	C. Light	▪ **Light**
3.3 Green packaging	3.3 Green packaging	6	GLA330: Will be able to learn the conditions, specifications, conditions and steps for green packaging and apply them in the logistics sector.	KN330/6: Circular Economy means to minimize the original input, _____(A-D) _____ & opposite to a economy that is _____(I-IV) _____ & throwing them away. *(complete with the appropriate words).* A. water, water leakage & gasses B. hydrogen, energy supply & air **C. waste, energy leakage & emissions** D. trash, waste leakage, smoke I. Creating the wastes & giving them II. consuming the wastes & using them III. using the trashes & giving them **IV. consuming the resources & using them**	SK330/6: Some of the precautions that could be held for the supplement of green logistics are to _____(A-D) & _____(I-IV) *(complete with the appropriate words).* A. transport of products by small cars **B. transport of products in larger groups rather than in small groups** C. transport of products in smaller groups rather than large groups D. transport of wastes to waste bins I. increasing the general packaging & materials used II. reduction of making transport of products	RA330/6: EU Directive is aimed at; _____(A-D); _____(I-IV) A. decreasing the quality of the transportation; protecting packaging; B. decreasing the level of packaging; protecting human health; C. improving the quality of the transportation; protecting packaging; **D. improving the quality of the environment; protecting human health;** I. consuming resources; ensuring the functioning of the transportation & ideas for the rivalry in EU. **II. protecting resources; ensuring the functioning of the internal market &**

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					III. **reduction of general packaging & materials used.** IV. increasing the packaging material & products used.	**constraints for the rivalry in EU.** III. designing the packaging materials; ensuring the functioning of the travels & omitting the rivalry in EU. IV. decreasing travels; ensuring the functioning of the packaging & constraints for the rivalry in EU.
		5		KN330/5: While making the packaging to place on the market, which one of the following is not correct? A. Volume & Heaviness of the packaging is important, B. Decrease as minimum as possible, the content of dangerous materials in the packing, C. Use convertible & reusable packing materials, **D. Make the packing maximum to satisfy a**	SK330/5: For the meaning of sustainability in packaging, which one of the following is correct? **A. reducing harmful impacts on the green footprint.** B. increasing harmful impacts on the green environment. C. increasing reuse impacts on the green environment. D. reducing useful impacts on the green footprint.	RA330/5: Which one of the following is wrong for the environment friendly packaging method? A. Best materials to be used are newspapers & magazines, they are recyclable and biodegradable. **B. In the packing of foods, you can not use packaging materials twice which are used previously as a packing material in some other foods.**

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					big volume for it.		C. Try using reusable packaging, for example using fabric bags will help you in your shopping to carry your materials in a environment friendly way. D. Try to keep containers & large cardboard boxes in order to use them again.
			4		KN330/4: For the supplement of Green packaging, which materials must not be used? A. lightweight materials, B. reusable materials, C. recyclable materials, D. **non ecological materials.**	SK330/4: 4R1D means; A. to increase, reuse, reclaim, recycle & being non-degradable. B. to reduce, use, reclaim, non-recycled & being degradable. **C. to reduce, reuse, reclaim, recycle & being degradable.** D. to increase, reuse, reclaim, recycle & being degradable.	RA330/4: As a result of proper & good packaging, A. vehicles will be loaded in the best way B. the number of trips will be reduced **C. a lot of money will be spent,** D. .the amount of fuel burned will be reduced.
3.4 Green logistics data collection and management	3.4.1 Seven trends in the green logistics data collection	6	GLA341: Will understand the trends in the green logistics data collection	KN341/6: Explain the main trends concerning CO_2 data collection. • **CO_2 labelling will be standardised**	SK341/6: Interpret the advantage of environmental management systems.	RA331/6: Provide information about the Carbon Controlling system.	

				• **CO_2 emissions are priced**	**The environmental management system, as an operational environmental concept, forms the framework and procedure for the creation and design of operational structures and procedures for dealing with company-related environmental impacts**	**The developments in carbon controlling form the right basis for making ecological information available across product life cycles. By introducing an environmental management system or a company environmental information system, ecological information on material and material flows can be obtained. In the form of carbon controlling, emissions are converted into CO2-adequate figures, and the status quo of the company's environmental performance for the company, the value chain or the life cycle of a product can be determined (CO2 footprint) using such a peak figure**
		5		KN341/5: Explain the Carbon Controlling system. In the form of carbon controlling, emissions are	SK341/5: Analyse and categorize seven trends in	SK341/5: Analyse and categorize seven trends in

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				converted into CO_2_____ **(adequate)** figures.	the green logistics data collection. **1. Logistics is what counts** **2. Technological change is achieved through the solidarity of business, financial institutions and the public sector** **3. The more importance suppliers, business customers and logistics companies attach to CO_2 reduction** **4. The business models of logistics companies are changing as sustainable innovations open up new business opportunities.** **5. CO_2 labelling will be standardised** **6. CO_2 emissions are priced**	the green logistics data collection. **7. Logistics is what counts** **6. Technological change is achieved through the solidarity of business, financial institutions and the public sector** **4. The more importance suppliers, business customers and logistics companies attach to CO_2 reduction** **5. The business models of logistics companies are changing as sustainable innovations open up new business opportunities.** **3. CO_2 labelling will be standardised** **1. CO_2 emissions are priced** ▪ **2. CO_2 pricing will lead to stricter regulatory measures**

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						CO_2 pricing will lead to stricter regulatory measures	
			4		KN341/4: Explain the objectives of environmental management systems. The objective of EMS is to improve the relative quality of the environment by _____ **(reducing**) environmental impacts	SK341/4: Interpret the importance of environmental management systems. An environmental management system is thus designed in such a way that the relative improvement of environmental impacts also achieves the highest possible degree of _____ **(eco-effectiveness)**	RA341/4: You drive a truck (diesel engine) load from A to B ng. Which factors do you have to use to calculate a CO_2 emission. ▪ **Length of the route** ▪ **Weight of the load** ▪ **Topography of the route** ▪ **Exhaust emission standard of the truck**
		3.4.2 ISO 140001 Certification	6	GLA342 Will understand the structure of ISO 14001	KN342/6: Explain the Plan do check act cycle. Plan do check act describes a _____ (**control loop)** and is an instrument of green controlling.	SK342/6: Interpret the advantages of ISO 14001 management system. **The structure of ISO 14001 is based on the Plan-Do-Check-Act cycle (PDCA), which aims at a continuous improvement process. A not inconsiderable advantage of ISO 14001 is the**	RA342/6: Identify the key elements of an environmental strategy ▪ **Period covered by the strategy** ▪ **Quantified objectives** ▪ **Environmental content** **Sustainability**

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					concept of organization, which can encompass several locations and is therefore not tied to individual logistics operations. There is, however, for each permanent establishment, the local accountability	
			5	KN342/5: Describe the Concept and approaches of eco-controlling: ▪ **The following approaches can be distinguished with regard to the systematisation of different eco-controlling systems:** ▪ **Financially oriented approaches** ▪ **Ecologically oriented approaches** ▪ **Ecologically and economically integrated approaches**	SK342/5: Name the 3 steps which are necessary for green target costing 1. to identify essential _____ **(ecological)** customer requirements and the existing willingness to pay for green product features. 2. translation of the ecological customer requirements into design requirements of the product components, taking into account the environmental impacts over the entire _____ **(life cycle).**	RA342/ 5: Fill in the gap with the right word The structure of ISO 14001 is based on the Plan-Do-Check-Act cycle (PDCA), which aims at a _____**(continuous)** improvement process.

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						3. _____ **(ecologically)** oriented interpretation of the target cost.	
			4		KN342/4: List the different approaches of eco-controlling. ▪ **Financially oriented approaches** ▪ **Ecologically oriented approaches** • **Ecologically and economically integrated approaches**	SK342/4: Name the three main reasons for implementing an EMS according to ISO 14001 ▪ **basis for externa verification** ▪ **promoting environmental protection as an overarching objective** ▪ **instrument of entrepreneurial self-control**	RA342/4: Fill in the gaps with the right words In order to achieve the objectives of strategic environmental management that have already been addressed, it is essential to provide the necessary data and information and suitable instruments to _____ **(develop)** implement and _____ (**communicate)** the environmental strategy.
		3.4.3 Green target costing	6	GLA343: Will understand the importance of green target costing	KN343/6: What is the Carbon Footprint? A. Total amount of pollutants caused by a product B. Total amount of costs caused by a product	SK343/4: Name two examples for a key figures for green logistic outcome Turnover with ecological products [€] / Total turnover with all products [€]	RA353/5: Fill in the gaps with the right words. Target costing is an instrument of _____ (**eco-controlling)** that attempts to _____ **(transfer)** environmentally friendly innovation potentials to

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				C. Total amount of personnel costs caused by a product **D. Total amount of greenhouse gases emitted by a product**	Environmental protection and environmental damage costs [€] / Total operating costs [€] Savings through reduced resource consumption, avoidance of environmental damage and waste recycling per year [€]. Number and amount of fines related to environmental infringements	existing market offerings and prices by means of target environmental cost _____**(accounting)**
			5	KN343/5: What is a typical environmental performance indicator? A. Personnel costs in the warehouse B. Personnel costs in the vehicle fleet **C. Power consumption in the warehouse** D. O Kilometres driven per truck	SK 343/5 Name the 3 steps which are necessary for green target costing 1. to identify essential _____ **(ecological)** customer requirements and the existing willingness to pay for green product features. 2. translation of the ecological customer requirements into design requirements of the product components,	RA 353/5 Fill in the gaps with the right words The life cycle assessment primarily has an _____ **(internal)** function, but is also increasingly being used by logistics service providers as a means of communication for dialogue between companies and their _____ (**environment).**

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				taking into account the environmental impacts over the entire _____ **(life cycle).** 3. _____ **(ecologically)** oriented interpretation of the target cost	
		4	KN343/4 Which instrument is used to prepare decisions on environmental measures? A. Cost accounting B. Balance C. Environmental indicators D. Eco cost accounting	SK343/4 Name an example for a key figures for green logistic output **Total direct and indirect greenhouse gas emissions [t] / product unit [pcs.]** **Waste quantity [t] / product units [pcs.]** **Recyclable product units [pcs] / All product units [pcs]** **Waste water quantity [l] /product unit [pcs.]** **Quantity of hazardous waste [t] / total amount of waste [t]**	RA353/4 Fill in the gaps with the right word. Environmental indicators can be divided into relative (ratios) and ---- _____**(absolute)** indicators

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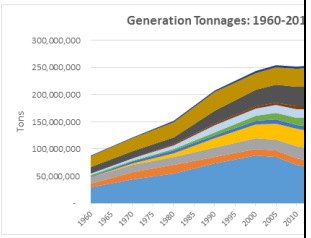
3.5 Waste management	3.5.1 General about waste	6	GLA351: Will be able to apply statistical information in the field of waste management.	KN351/6: European Commission adopted a European Union Action Plan for circular economy in 2015. The main purpose of the approach is _____(A-D) _____ through _____(I-IV) _____. *(complete with the appropriate words).* **A. minimize environmental impacts** B. minimize economic growth. C. increase environmental impacts D. reduce health impacts of waste I. increased landfilling and incineration of waste II. **increased recycling of waste, re-using, re-manufacturing, limit use of landfilling.** III. increased recycling and landfilling of waste IV. increased incineration with energy recovery	SK351/6: Generate the waste categories sequence by volume of generation. The options are as follows (1) food and green, (2) plastic, (3) metal, (4) wood, (5) glass, (6) paper and cardboard. A. 2-1-6-4-5-3 B. 1-2-3-6-4-5 **C. 1-6-2-5-3-4** D. 1-6-2-4-5-3	RA351/6: The graph shows the amount of waste by categories from 1960 to 2015. What can be deduced from the graph for the future (A-D) and what measures will be needed for the future (I-IV)?  https://www.epa.gov/sites/production/files/2018-07/image2_0.png A. The amount of waste will increase by 2050 and then decrease again. B. The amount of waste was reduced in 2010. C. The amount of waste will decrease regardless of category.

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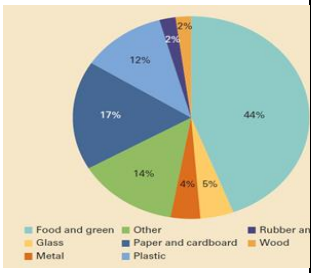
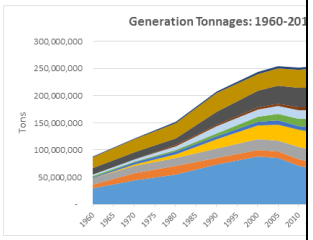
						D. The amount of waste will increase regardless of category. I. Increase the number of incinerators. **II. Increase the capacities of enterprises that collect wastes and appropriately manage with them.** III. Increase waste disposal areas. IV. Raising awareness on waste generation.
		5		KN351/5: The main purpose of circular economy approach is A. **minimize environmental impacts.** B. minimize economic growth. C. increase environmental impacts. D. reduce health impacts of waste.	SK351/5. Which category of waste was the most generated in the world in 2016? A. plastic B. wood **C. food and green** D. paper and cardboard	RA351/5: The amount of waste will increase regardless of category of waste through years. What measures will be needed for the future? A. Increase the number of incinerators. **B. Increase the capacities of enterprises that collect wastes and**

						appropriately manage with them. C. Increase waste disposal areas. D. Raising awareness on waste generation.
		4		KN351/4: The main purpose of the circular economy approach is minimizing environmental impacts through A. increased landfilling and incineration of waste. **B. increased recycling of waste, re-using, re-manufacturing and limit use of landfilling.** C. increased recycling and landfilling of waste. D. increased incineration with energy recovery.	SK351/4: Identify the waste composition order considering to waste generation. The options are as follows (1) food and green, (2) plastic, (3) metal, (4) wood, (5) glass, (6) paper and cardboard. See attached figure for help.  A. 2-1-6-4-5-3 B. 1-2-3-6-4-5 **C. 1-6-2-5-3-4** D. 1-6-2-4-5-3	RA351/4: The graph shows the amount of waste by categories from 1960 to 2015. What can be deduced from the graph for the future?  https://www.epa.gov/sites/production/files/2018-07/image2_0.png A. The amount of waste will increase by 2050 and then decrease again. B. The amount of waste was reduced in 2010.

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						C. The amount of waste will decrease regardless of category. D. **The amount of waste will increase regardless of category.**
	3.5.2 Waste generation	6	GLA352: Will be able to recognise categories of waste and apply EU measures in the field of waste management and generation.	KN352/6: Which type of waste management is least desirable in Europe (A-D) and which type of waste management Europe aim for (I-IV)? **A. disposal** B. recycle C. incinerate D. recovery **I. recycle** II. re-use **III. incinerate** IV. recovery	SK352/6: For different countries in Europe, you want to know, how many wastes was generating in 2018? Where you find reliable data (A-D) and why (I-IV)? A. You ask trainer. B. Wikipedia. C. Forum. **D. Eurostat.** Reason: **I. There are statistics, verified data.** II. He/she is an expert in that field and he/she will know for sure. III. You can ask people for help and maybe find an expert among them.	RA352/6: While cleaning your garage, you find several electrical and electronic equipment that is out of active. What you should do with that? A. You put them in containers of municipal waste. B. You drive them to a wild landfill. **C. You drive them to the enterprise which separately collect and appropriately manage such waste.** D. You incinerate them in the yard.

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					IV. It is the website that covers information from around the world.	
		5		KN352/5: Which type of waste management has the biggest impacts on the environment? **A. disposal** B. recycle C. incinerate D. recovery	SK352/5: For different countries in Europe, you want to know, how many wastes was generated in 2018? Where you find reliable data? A. You ask trainer. B. Wikipedia. C. Forum. **D. Eurostat.**	RA352/5: What you should do with electronic equipment that is out of active? A. Re-use them. **B.** Incinerate them. **C. Deliver to an enterprise that collect and manage with these categories of waste.** D. Sell them as second raw material.
		4		KN352/4: Which type of waste management is most commonly used for municipal waste in Europe? **A. disposal** B. recycle C. incinerate D. recovery	SK352/4: Where will you find reliable statistics data in the field of waste generation? A. Wikipedia. **B. Eurostat (waste statistics).** C. In the library. D. Ask trainer.	RA352/4: What you should do with electronic equipment that is out of active, besides that you do not want pollute the environment? A. Re-use them. B. Dispose them. **C. Deliver to an enterprise that collect and manage with this categories of waste.**

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						D. Send to incinerators that deal with energy recovery.
	3.5.3 Waste regulations	6	GLA353: Will be able to apply European legislation in the field of waste management.	KN353/6: Regulation of the European Parliament and of the Council on ___(A-D) ___ (2016) lays down very detailed rules about the procedures and arrangements for the shipment of waste according to _____(I-IV) ____. (*complete with the appropriate words*). **A. shipments of waste** B. hazardous waste C. non-hazardous waste D. waste transition **I. the destination and route of the shipment** **II. the destination and route of the shipment** **III. the type of waste shipped** **IV. the type of treatment to be applied to the waste at its destination** V. the travel time of the year	SK353/6: Generate a multiple stages model of waste prevention and management that you would applied as a priority order in your future company. Your model should be based on *Directive 2008/98/ec of the European Parliament and of the Council of 19 November 2008 on waste*. Available here are some stages: 1: disposal, 2: prevention; 3: recycling; 4: other recovery, e.g. energy recovery; 5: preparing for re-use. A. 4-3-5-2-1 B. 5-4-1-2-3 **C. 2-5-3-4-1** D. 3-5-1-4-2	RA353/6: How will you deal with situation when you find out that one of the companies that you collaborate with wants to violate the provisions of the *Directive 2008/98/ec of the European Parliament and of the Council of 19 November 2008 on waste?* I would prevent them from violating by: (choose the best action from A-D) A. Doing nothing. B. Finding sanctions in European regulations and getting acquainted the company representatives with them. C. Yelling at company representatives. **D. Finding sanctions in national regulations and getting acquainted the**

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						company representatives with them.
		5		KN353/5: Regulation of the European Parliament and of the Council on shipments of waste (2016) lays down very detailed rules about the procedures and arrangements for the shipment of waste according to _____(A-D) ____. (*complete with the appropriate words*). **A. the destination and route of the shipment** **B. the type of waste shipped** **C. the type of treatment to be applied to the waste at its destination** D. the travel time of the year	SK353/5: Generate a multiple stages model of waste prevention and management that you would applied as a priority order in your future company. Your model should be based on *Directive 2008/98/ec of the European Parliament and of the Council of 19 November 2008 on waste*. The first stage should be prevention (1), other stages are available here: 2: disposal; 3: recycling; 4: other recovery, e.g. energy recovery; 5: preparing for re-use. A. 1-3-5-2-4 B. **1-5-3-4-2** C. 1-2-5-3-4 D. 1-3-5-4-2	RA353/5: For violation of the provisions of the Directive, Member States set their own sanctions. How will you deal with situation when you find out that one of the companies that you collaborate with wants to violate the provisions of the *Directive 2008/98/ec of the European Parliament and of the Council of 19 November 2008 on waste?* I would prevent them from violating by: (choose the best action from A-D) A. Doing nothing. B. Finding sanctions in European regulations and getting acquainted the company representatives with them. C. Yelling at company representatives.

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						D. **Finding sanctions in national regulations and getting acquainted the company representatives with them.**
		4		KN353/4: Regulation of the European Parliament and of the Council on ___(A-D) ___ (2016) lays down very detailed rules about the procedures and arrangements for the shipment of waste according to the destination and route of the shipment, the type of waste shipped and the type of treatment to be applied to the waste at its destination. (*complete with the appropriate word*). **A. shipments of waste** B. hazardous waste C. non-hazardous waste D. waste transition	SK353/4: Generate a multiple stages model of waste prevention and management that you would applied as a priority order in your future company. Your model should be based on *Directive 2008/98/ec of the European Parliament and of the Council of 19 November 2008 on waste*. The first stage should be prevention (1) and the last stage should be disposal (5), other stages are available here: 2: recycling; 3: other recovery, e.g. energy recovery; 4: preparing for re-use. A. 1-3-4-2-5 B. 1-2-3-4-5 C. 1-2-4-3-5 D. **1-4-2-3-5**	RA353/4: How will you deal with situation when you find out that one of the companies that you collaborate with wants to violate the provisions of the *Directive 2008/98/ec of the European Parliament and of the Council of 19 November 2008 on waste?* I would: (choose the best action from A-D) A. Do nothing. B. Help them. C. Yell at company representatives. D. **Find sanctions in national regulations and get acquainted the company representatives with them.**

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	3.5.4 EU approach to waste management	6	GLA354: Will be able to consider EU recommendations in waste management.	KN354/6: One of the EU's proposals on waste management with a higher common target for municipal waste recycling, packaging waste and lower limits for municipal waste landfills is about **reusing wastes to resources**. What is this particular issue about in general? A. Using the municipal waste and turn them into heat. B. Reusing wasted water and save natural resources. **C. Harvesting the materials from wastes instead of consuming natural sources.** D. Turning plastic waste into new product.	SK354/6: On which issue would you pay the most attention if you would be in charge to ensure the supply chain with secondary raw materials? **A. Availability of second raw materials and supplement them with natural resources as needed.** B. Prices of second raw materials in different markets. C. What is the average delivery time for each specific second raw material needed. D. Since the market of second raw material is not stable the company's warehouse capacity is important.	RA354/6: Which internet source would you use if you were intending to keep up with the waste management directives? A. google.com B. environmentalscience.org **C. ec.europa.eu/environment/waste** D. journals.elsevier.com/waste-management
		5		KN354/5: One of the EU's proposals on waste management with a higher common target for municipal waste recycling, packaging waste and lower	SK354/5: If you would be in charge of purchasing the second raw material, where would you buy them?	RA354/5: Which action in product designing process is the most difficult to estimate the cost of in regarding to waste management?

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				limits for municipal waste landfills is about **designing the product**. What is this particular issue about? A. Designing the product with no toxic substances. B. **Designing durable and repairable products**. C. Designing the product with minimal resources needed. D. Designing only efficient products to save energy.	A. Disposal landfill company where a lot of different materials can be found. **B. Material recycling company where precise material sorting is done.** C. Waste management company where basic sorting of the waste is done. D. Raw material company where raw material is extracted from several sources.	A. The cost of waste collection. B. Cost of unused material. **C. Waste prevention.** D. Cost of raw material.
		4		KN354/4: One of the EU's proposals on waste management with a higher common target for municipal waste recycling, packaging waste and lower limits for municipal waste landfills is about **waste hierarchy.** What is the least desirable scenario of waste? A. Waste generation. B. Waste recovery. C. Waste recycling. **D. Waste disposal.**	SK354/4: Which material is addressed in terms of "second raw material"? (choose the most obvious one) A. Water. B. Gass. **C. Paper.** D. Screws.	RA354/4: If you would be in a situation to buy a new product and you would have several options which product would you by? A. The product that is designed to be disassembled. B. The product that is more expensive since these products are more durable. C. The product that is less expensive.

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						D. The product that you really need.
	3.5.5 Reverse logistics for waste management	6	GLA355: Will be able to describe and/or use Reverse logistic for waste management	KN355/6: Considerable environmental and financial saving could be gained by (A-D) . One of the fundamental barriers to this is (I-IV) . A. Using recyclable source materials. B. Relocate distribution centres. **C. Combining transport resources across different supply chains.** D. Collecting waist less frequently. I. Not enough vehicles **II. Rival businesses** III. Not all products can be returned to their point of origin. IV. Financial burden of additional space.	SK355/6: What would you do, when a vehicle has to be diverting from its schedule to drop recyclate at a specific processing facility and the additional mileage travelled outweigh the financial returns? A. I would divert it to the regional distribution centre. B. I would find the financial deficit in other financial sections. **C. I would organise out-of-town groupage facilities.**	RA355/6: How will you promote reverse logistics to my management? A. I will invite specialist in environmental thinking B. **I will inform the management about take-back strategies and about minimizing the cost associated with separation and transport whilst maximizing any value that can be gained through its recovery.** C. I will promote the measures of all impacts in monetary terms, balancing all costs and benefits about waste management. D. I will convince the management that all products have to be returned to their point of origin.

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		5		KN355/5: When you are about making a plan for delivery of the waste/recyclables, you will consider most: **A. delivery vehicle schedule, fluctuation of recyclables values, out of city facilities** B. back loading of the vehicle, end markets, financial returns, consolidation centres C. central distribution system organisation, retailers' aspects, waste contractors D. regional distribution centres, re-processing facilities, delivery costs	SK355/5: Chose a reasonable reason, why take-back mixed collected waste using delivery vehicles may not be achieved in practice? A. This would require additional vehicles on its own delivery rounds. **B. Only "clean" recyclate such as uncontaminated paper, cardboard and plastics would be suitable for take-back.** C. That would affect the centralized distribution system as an overload. D. Multi-drop delivery system would not have enough space on the vehicles.	RA355/5: What would you do if your management don't give any solution on the problem of the small area for separate waste set aside a retail store? A. Nothing. B. I would suggest collecting some of the waste inside the building. C. **I would suggest more frequent waste-collection.** D. I would suggest bigger bins.
		4		KN355/4: When somebody is speaking about reverse logistic in waste management, they mean: A. The waste is returned back to its origin. B. **Reducing waste their output and better**	SK355/4: There are some key issues that would have to be considerate with regard to using existing delivery fleets for take-bake systems: Is there spare capacity on the existing delivery	RA355/4: If my management would like to make a process of planning, implementing and controlling the efficient, cost-effective flow of raw materials, I would:

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				manage their respective logistic operations. C. The transport service is taking a reverse route. D. Use new product recovery networks.	rounds? Do the delivery vehicles visit frequently enough to service the waste collection? Which materials may be collected? Where does the waste have to be delivered to? How regular is the demand for waste goods collection? Select one of the missing possible key issue: **A. What equipment is needed?** B. On what kind of drive are the delivery vehicles going? C. Do we have enough workers? D. Do we have a major waste contractor?	A. Inform them about the strategies regulated by European Parliament. B. Do nothing. C. Convince them that all products have to be returned to their point of origin. **D. Inform them about Reverse logistics for waste management.**
	3.5.6 Green supply chain management	6	GLA356a: Will be able to describe and/or use Cost-Benefit Analysis (CBA) as an analytical tool of waste management.	KN356a/6: Chose one example of lowering cost of avoiding negative effects in terms of environmental impacts? A. Learning more about the actual problem **B. Pollution control** C. Promote public awareness of waste prevention	SK356a/6: Generate a multiple stages model of cost benefit analysis where present values regarding time value of money are needed for bots costs and benefits flow to facilitate comparison of them! Available here are some stages: 1: Valuation of physical impacts, 2: Cost	RA356a/6: Avoiding negative effects on the environment it costs. How will you deal with situation when you want to change behavior of others in regards to gaining profit with optimization of economic and

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				D. Profit optimisation	and benefit flow discounting, 3: Sensitivity analysis, 4: Identification of physical impacts, 5: Definition of the project, 6: inventory analysis, 7: Goal and scope definition. A. 1-3-5-6-7 **B. 5-4-1-2-3** C. 7-5-2-4-1 D. 2-5-6-1-3	enviromental aspect of waste management? A. I will promote reuse and repair of the products. B. Strategy for waste management are already designed, regulated and dictated by European Parliament. C. I will propose a revision of enviromental impacts during the lifetime of the product and present it to my colegues. **D. I will present information about Cost-Benefit Analysis of waste management.**
		5		KN356a/5: What is the first step if you want to apply an analytic tool for a specific decision on waste management in regard to the benefits and costs of it? A. compare the cost and benefit flow	SK356a/5: Below are generated sequences of multiple stages model of cost benefit analysis where present values regarding time value of money are needed for both costs and benefits flow to facilitate comparison of them! Chose the most	RA356a/5: The management decided to do a Cost-Benefit Analyse. After they defined the project with consideration of welfare and time, the group defined all impacts with a physical value. At that point the process stopped because some of

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				B. estimate the environmental impacts into money **C. examine the private cost, social costs and benefits in terms of welfare** D. take all the steps and its impacts in mind	appropriate sequence. The stages are: 1: Valuation of physical impacts, 2: Cost and benefit flow discounting, 3: Sensitivity analysis, 4: Identification of physical impacts, 5: Definition of the project, 6: Goal and scope definition. A. 5-4-1-2-6 **B. 5-4-1-2-3** C. 4-6-5-3-2 D. 4-1-5-2-3	the colleagues presented good qualitative results of the existing project with the idea that the results are good enough and the system don't need any change. How will you act in this case? A. I will present the stage of inventory analysis, where imputs and outpust from each process are geathered and try to continue the method. **B. I will present the stage of valuation of physical impacts, where the physical impatc should be given a montary value and try to continue the method.** C. I will agree, because the colegues are very competent. D. I will propose another project of waste management.
		4		KN356a/4: You would use Cost-Benefit Analysis if you would like to analyse:	SK356a/4: Select the stages that are not required	RA356a/4: The management decided to do a Cost-Benefit Analyse.

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				A. The costs of production and transportation **B. All environmental impacts and avoiding negative effects in monetary terms** C. Negative monetary effects of production system D. The costs of welfare and time	for Cost-Benefit analyses from the list: 1: Valuation of physical impacts, 2: Cost and benefit flow discounting, 3: Sensitivity analysis, 4: Inventory analysis, 5: Definition of the project, 6: Identification of physical impacts, 7: Goal and scope definition. A. 3, 7 B. 3, 4 C. 4, 6 **D. 7, 4**	After they defined the project with consideration of welfare and time, the group defined all impacts with a physical value and also with a monetary value. At that point the process stopped. What would you propose to them? A. I would propose the stage of inventory analysis, where imputs and outpust from each process are geathered. B. I would propose another project of waste management. C. I would do nothing. D. **I would propose cost and benefit flow discounting, where the monetased values of cost and benefits are transformet into present values.**
		6	GLA356b: Will be able to describe and/or use Life Cycle Assessment (LCA) as an analytical tool of waste management.	KN356b/6: Optimisation of waste management can be done with__(A-D)__, where a model considers all potential_____(I-IV)	SK356b/6: Generate a multiple stages model of Life Cycle assessment. Chose from the list:	RA356b/6: Several things about waste magement should be done in your company, but the first is to analyse all potential

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				from raw material to final disposal. *(complete with the appropriate words)* A. cost-benefit analysis **B. life-cycle assessment** C. multi-criteria decision analysis D. profit optimisation I. **environmental impacts during the lifetime of a product** II. impacts in monetary terms III. criteria and alternatives simultaneously IV. negative effects of production system	1: Life cycle impact assessment, 2: Definition of the project, 3: Goal and scope definition, 4: Identification of physical impacts, 5: interpretation, 6: Inventory analysis. 7: Valuation of physical impacts, 8: Cost and benefit flow discounting, 9: Sensitivity analysis, A. 2-4-7-8-9 B. 3-4-7-8-5 C. 2-6-1-5 **D. 3-6-1-5**	encironmental impacts during the lifetime of your product. How will you deal with situation when you want to change behavior of others in regards to production processes? A. Strategy for waste management are already designed, regulated and dictated by European Parliament. B. I will promote reuse and repair of the products. C. **I will present information about Life Cycle Assesment.** D. I will present Multi-Criteria Decision Analysis.
		5		KN356b/5: Which step of the Life Cycle Assessment consist about gathering resources and emissions for separate units or processes? A. Goal and scope definition **B. Inventory analysis**	SK356b/5: Below are generated sequences of multiple stages model of Life Cycle Assessment. Chose a sequence that will have a problem in the final stage of the method. The stages are: 1: Life cycle impact assessment, 2: Goal	RA356b/5: The management decided to do a Life Cycle assessment. After they defined the material extraction, manufacturing, usage and disposal, the group gathered the resources and emissions. At that point

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				C. Life cycle impact assessment D. Interpretation	and scope definition, 3: interpretation, 4: Sensitivity analysis, 5: Inventory analysis. A. 2-5-1-3 **B. 2-5-1-4** C. 2-3-1-5 D. 2-3-1-4	the process stopped because some of the colleagues insisted that the system don't need any change. How will you act in this case? A. I will agree, because the colegues are very competent. B. I will disagree but won't say anything. C. I will present the stage of valuation of physical impacts, where the physical impatc should be given a montary value and try to continue the method. D. **I will present how resources and emissions can be sorted in groups based on specific impacts categories and try to continue the method.**
		4		KN356b/4: To consider all potential environmental impact during the lifetime of a product you would use: A. multiple comparison of best practices	SK356b/4: Below are generated sequences of multiple stages model of Life Cycle assessment. Chose the most appropriate sequence. The	RA356b/4: The management decided to do a Life Cycle assessment. After they defined the material extraction, manufacturing, usage and

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				B. cost-benefit analysis **C. life-cycle assessment** D. multi-criteria decision analysis	stages are: 1: Life cycle impact assessment, 2: Goal and scope definition, 3: interpretation, 4: Inventory analysis. A. 2-4-3-1 **B. 2-4-1-3** C. 4-1-2-3 D. 4-1-3-2	disposal, the group gathered the resources and emissions. At that point the process stopped. What would you propose to them? A. I would propose the stage of inventory analysis, where imputs and outpust from each process are geathered. B. **I would propose that resources and emissions are sorted in groups based on specific impacts categories.** C. I would do nothing. D. I would propose to build a model for specific decision-making process.
		6	GLA356c: Will be able to describe and/or use Multi-Criteria Decision Analysis (MCDA) as an analytical tool of waste management.	KN356c/6: Optimisation of waste management can be done with (A-D), where a model that considers many different aspects, which can me monetary, environmental or others. It identifies (I-IV)	SK356c/6: Generate a multiple stages model Multi-Criteria Decision Analysis. Chose from the list: 1: Life cycle impact assessment, 2: Definition of the project, 3: Model Building and evaluation, 4:	RA356c/6: Several things about waste magement should be done in your company and you would like to analyse the decision making by several criteria simultaneosuly. How will you deal with situation when you want to change behavior of others in

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				. *(complete with the appropriate words)* A. cost-benefit analysis B. life-cycle assessment **C. multi-criteria decision analysis** D. profit optimisation I. resources and emissions and compare them. II. environmental impacts during the lifetime of a product. III. negative effects of production system. IV. **several criteria and alternatives simultaneously .**	Goal and scope definition, 5: Identification of physical impacts, 6: interpretation, 7: Inventory analysis, 8: Development of an action plan, 9: Valuation of physical impacts, 10: Problem identification and organisation, 11: Cost and benefit flow discounting, 12: Sensitivity analysis, A. 2-5-9-11-12 B. 2-5-9-11-12 **C. 10-3-8** D. 4-3-8 E. 10-3-5-8 F. 4-7-1-6 G. 2-7-1-6	regards to decision making? A. Strategy for waste management are already designed, regulated and dictated by European Parliament. B. I am not a decision maker. C. I will present information about Life Cycle Assesment. D. **I will present Multy-Criteria Decision Analysis.**
		5		KN356c/5: Which step of the Multi-Criteria Decision Analysis consists about creating a weighting system within the model? A. Cost and benefit flow discounting B. Model building and evaluation C. Inventory analysis **D. Development of an action plan**	SK356c/5: Below are generated sequences of the model Multi-Criteria Decision Analysis. Chose a sequence that will have a problem in the final stage of the method. The list of stages is: 1: Model Building and evaluation, 2: Interpretation, 3: Development of an action plan, 4: Sensitivity analysis, 5: Problem	RA356c/5: The management decided to do a Multy-Criteria Decision Analysis. They firstly identified the problem, known issues, common goals, stakeholder's interests, than they made a weighting system within the model to balance all of the aspects. How will you act in this case?

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						identification and organisation. **A. 5-1-4** B. 5-1-3 C. 1-3-5 D. 1-3-2	A. I will agree, because the colegues are very competent. B. I will disagree but won't say anything. C. I will present a missing step - of valuation of physical impacts, where the decision impatc should be given a montary value and try to persist to go trough all the steps of the method. **D. I will present a missing step - the model building and evaluation for the specific decision-making process and try to persist to go trough all the steps of the method.**
			4		KN356c/4: To analyse a very complex process of waste management with different approaches simultaneously you would use: A. multiple comparison of best practices B. cost-benefit analysis C. life-cycle assessment	SK356c/4: Below are generated sequences of the model Multi-Criteria Decision Analysis. Chose the most appropriate sequence. The stages are: 1: Model Building and evaluation, 2: Development of an action plan, 3: Problem	RA356c/4: The management decided to do a Multi-Criteria Decision Analysis. They firstly identified the problem, known issues, common goals and stakeholder's interests. At that point the process stopped. What

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					D. multi-criteria decision analysis	identification and organisation **A. 3-1-2** B. 1-2-3 C. 3-2-1 D. 1-3-2	would you propose to them? A. **I would propose the stage of model building and evaluation for the specific decision-making process.** B. I would propose that the data would be synthesised and created a weighting system. C. I would do nothing. D. I would propose specific decision making.
BENEFITS OF GREEN LOGISTICS	**4.1 Environmental benefits**	4.1 Environmental benefits	6	GLA410:Will be able to describe environmental benefits of different components of green logistics	KN410/6: The benefits of green transportation are_____(A – D)____while green warehousing have such benefits;_____(I – IV)_____. **A. Reduce improper land use** B. Adopting sustainable and energy-saving alternatives C. Reduce air pollution D. Reduce biodiversity loss	SK410/6: Which of the followings is NOT one of the key indicators __(A-D)____for the measurement of effectiveness of green transportation activity (____I-IV___) and for the measurement of green purchasing activity. A. Utilization vehicles capacity B. Reducing transportation amount **C. Optimizing inventory of raw materials**	RA410/6: What you do NOT say to promote green logistics to your management? A. **I will explain all impacts in monetary terms, balancing all costs and benefits about environment** B. It leads to reasonable natural resource utilization and less energy usage C. I will explain about compliance with

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					I. Increased inventory II. Use of minimal materials to reduce packaging cost III. Lower waste disposal costs IV. Use recycle, reuse materials, minimize waste	D. Using eco-energy transportation I. Selecting green supplier II. Using green raw material III. Supporting locally raw material IV. **Route transportation optimization**	regulatory requirements D. I will promote minimizing reliance on scarce environmental resources
			5		KN410/5: Which one of the followings is the most effective carbon saving measure? A. Eco-drivers B. New vehicle technology **C. Switch to biofuel** D. D. Modal shift	SK410/5: Which of the followings is NOT one of the key indicators for the measurement of effectiveness of green transportation activity? A. Utilization vehicles capacity B. Reducing transportation amount **C. Optimizing inventory of raw materials** D. Using eco-energy transportation	RA410/5: Inspite of several benefits from green logistics there are some paradoxes that arise. Which one of the following is NOT one of paradoxes of green logistics? A. Cost B. Reliability C. Time/Flexibility **D. Waste reduction**
			4		KN410/4: Which mode of transportation has the lowest environmental impact? A. A personal vehicle B. A city bus C. An airplane **D. A bicycle**	SK410/4: Green logistics knowledge enables professionals _____ (A –D) ____. A. Environmental impact of the various modes of transport	RA410/4: It is well known that freight ____ (A –D) ___ accounts for the largest share of logistics emissions. A. Transportation B. Warehousing

					B. Reverse logistics activities C. How to improve energy efficiency within the logistics and transport sectors D. **All of the above**	C. Packaging **D. Reverse Logistics**
4.2 Business Benefits for companies	4.2 Business Benefits for companies	6	GLA420: Will be able to identify benefits of green logistics for business	KN420/6: Green logistics contribute to the creation of economic values in companies such as ____(A-D) ___and social values as ____(I-IV) ___. A. Enhanced customer satisfaction B. Better relations with stakeholders **C. Development in harmony with culture and available resources** D. Reduced taxes I. Enhanced quality of life II. II. Reduction in environmental impact III. Creation of jobs **IV. Limitless use of natural resources**	SK420/6: It is widely agreed that consumers increasingly prefer products or services provided in environmentally sound manner. Along this line, which statement is NOT correct? A. Any company could become totally carbon neutral by outsourcing all its production. B. Environmental pro-activism is generally assumed to come at an additional cost to the corporations. **C. A change towards providing environmental friendly way come at an additional cost to the corporations.** D. Green logistics will secure and/or increase market share whilst	RA420/6: Green logistics manager should be able to; I. Bring the green values strongly into the various parts of the transport chain II. Plan inventory operations environmentally III. Design and manage the packaging process environmentally IV. Guide staff towards green values V. Take green values into account VI. Gives priority to economic benefits **A. (I), (II), (III), (IV), (V)** B. (I), (II), (III), (IV), (VI) C. (I), (II), (IV), (V), (VI) D. (II), (III), (IV), (V), (VI)

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					improving profitability.	
		5		KN420/5: Green logistics contribute to the creation of social values as ____(A-D) ___. A. Development in harmony with culture and available resources **B. Reduced liability risk** C. Reduction in environmental impact D. Access to clean water and clean energy	SK420/5: Which one of the followings is NOT at the core of green logistics? **A. Reduce production costs** B. Reduce production of hazardous substances C. Improve efficiency of using resource D. All	RN420/5: Which one of the following statements in NOT true? A. Effective management of resources and suppliers can reduce production costs B. The production of hazardous substances can be reduced, thereby preventing organizations from being fined C. The relevant operational costs are reduced whilst; the efficiency of using resources is improved D. All are true
		4		KN420/4: Which one of the followings is NOT the benefit of green logistics at the enterprise level? A. Performance efficiency and the quality of the services **B. Attractiveness for existing investors**	SK420/4: How do you measure the ecological impact of logistics chain? A. With cumulative energy consumption **B. With cumulative money spent** C. With transport intensity	RN420/4: Which one of the following statements will be more effective to convince my manager to implement green logistics? **A. Reduce overall business costs** B. Reduce use of toxic materials

					C. Attractiveness for new market D. Promote reverse logistics	D. With transport footprint	C. Improve employee satisfaction D. Develop new products/Win new customers
	4.3 Benefits of components in green logistics	4.3 Benefits of components in green logistics	6	GLA430: Will be able to sum up benefits of green logistics according to the each components of GL.	KN430/6: Green supply chain management is needed for ____(A–D)_____and components of the green supply chain which are effective ____(I-IV)____. A. Increasing environment constraints due to global warming B. Increasing environmental awareness in stakeholders C. Evolving consumer and client demand **D. All** I. Production, Material Purchase, Packaging, Warehousing, Logistics & Reverse Logistics, Economic Analysis II. **Design of products, Production, Material Purchase, Packaging, Warehousing, Logistics & Reverse Logistics**	SK430/6: What you do NOT expect from network optimization? **A. Development of pooling and hiring system** B. Distribution & transportation efficiencies C. Reduced reverse logistics D. Improved fleet management.	RA430/6: What would you do to obtain maximum environmental benefit from green logistics in terms of transportation? A. Choose and plan the correct route B. Estimate driving time for each vehicle/driver C. Organize loading and unloading of goods whenever necessary **D. All of the above**

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				III. Design of products, Material Purchase, Packaging, Warehousing, Logistics & Reverse Logistics, Economic Analysis IV. Design of products, Production, Material Purchase, Packaging, Warehousing, Economic Analysis		
		5		KN430/5: Why should people be concerned about sustainable transportation? A. For the environment **B. To save money** C. For human health reasons D. All of the above	SK430/5: Idling, or letting the engine run when parked or not in use, does which of the following: A. **Decreases consumption of fuel.** B. Wastes money. C. Causes vehicle wear and tear. D. Emits toxic pollutants into the environment	RA430/5: How do you deal to optimize packaging to have environmental benefits? A. Packaging with extra attention to biodegradable materials **B. Packaging with extra attention to heavy materials** C. Packaging with extra attention to low energy materials D. Packaging with extra attention to low waste materials
		4		KN430/4: Which one of the benefits cited most by companies implementing green logistics?	SK430/4: Which component of green logistics has the highest environmental benefits?	RA430/4: I recommend to my company to apply the rules of green supply chain management since ____(A –D)_____.

					A. Expand to new markets B. Optimize manufacturing C. **Improve brand image** D. None of the above	A. Warehousing B. Data management C. Packaging **D. Transportation**	A. Increasing environment constraints due to global warming B. Increasing environmental awareness in stakeholders C. Evolving consumer and client demand D. **All**
URBAN LOGISTICS	**5.1 EU polices & directives**	5.1 EU polices & directives	6	GLA510: Will be able to know & understand what is urban logistics.	KN510/6: Urban Logistics provides the mobility of_____(A-D) *(complete with the appropriate words)* A. town freight through buying of goods by or for private organisations taking place in an urban area. B. village travels through the transportation of goods by or for commercial entities taking place in an urban area. **C. urban freight through the transportation of goods by or for commercial entities**	SK510/6: Urban Logistics is one of the most important focus topics _____(A-D) & _____(I-IV) *(complete with the appropriate words).* A. in the European Commission's Food Package B. in the European Commission's Urban Solid-waste Package C. in the European Commission's Village Transport Package **D. in the European Commission's Urban Mobility Package**	RA510/6: **Urban logistics / City logistics** mean to; A. supply freight distribution in distance areas, omitting plans raising its complete proficiency against traffic jam & emissions. B. supply freight distribution in town areas, omitting plans raising its complete proficiency against train jam & emissions. **C. supply freight distribution in urban areas, developing plans raising its complete proficiency**

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					taking place in an urban area. D. urban freight through the transportation of vehicles by or for commercial entities taking place in a village area.	**I. also necessary for cities to operate successfully and to establish a good harmony with the urban traffic.** II. also necessary for towns to operate successfully and to establish a good harmony with the citizens. III. also necessary for people to operate successfully and to establish a good harmony with the other people. IV. also necessary for cities to operate successfully and to cut the relation with the urban traffic.	**against traffic jam & emissions.** D. delete freight distribution in urban areas, deleting plans raising its complete proficiency against traffic jam & emissions.
			5		KN510/5: Which one is a type of transportation? A. Cars B. Ships C. Trains D. **All of them**	SK510/5: While making the logistics, how can we _____(A-D) where they are a common problem all around the world.	RA510/5: Urban logistics aim is _____(A-D) *(complete with the appropriate words)*

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						(complete with the appropriate words) **A. reduce the pollution, traffic jam & also accidents** B. increase the pollution, cars & also accidents C. reduce the transportation, trucks & also cars D. increase the pollution, traffic jam & also shopping	A. to supply money for a proper & efficient selling of products in the cities & to create the best solutions to children's requests. B. to supply assistance for an improper & inefficient consuming of products in the cities & to create the best solutions to seller's requests. C. to get assistance for a proper & efficient selling of products in the shopping malls & to create the temporary solutions to consumers' requests. D. **to supply assistance for a proper & efficient transfer of products in the cities & to create the best solutions to consumers' requests.**
			4		KN510/4: Which one of the following is not a problem while making the mobility? A. Pollution	SK510/4: Which transportation is the most used one? A. Aeroplanes **B. Cars**	RA510/4: 'Urban logistics' is described as _____(A-D) *(complete with the appropriate words)*

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					B. Traffic jam **C. Buildings** D. Accidents	C. Trains D. Ships	A. making shopping of the products, materials & waste within, into, from, out, within or through the buildings. B. buying the products, materials & waste within, into, from, out, within or through the shopping malls. C. use of the products, materials & waste within, into, from, out, within or through the business centres. D. **the transportation of the products, materials & waste within, into, from, out, within or through the urban place.**
	5.2 Main problems in urban logistics	5.2 Main problems in urban logistics	6	GLA520: Will be able to know & apply the European Union policies & directives in urban logistics.	KN520/6: Overcrowding makes a bad influence on the_____(A-D); _____(I-V) *(complete with the appropriate words)* A. roads & on the animals; B. buildings & economy of employees; C. gardens & economy of employers;	SK520/6: In city logistics, it must be satisfied that_____(A-D), _____(I-V) *(complete with the appropriate words)* A. stores are not kept with the required needs, transfers to houses are made seldom,	RA520/6: The efficiency of the transportation method of the European Union, _____(A-D). *(complete with the appropriate words)* A. financial & economical situations, changes in the salaries & payment requirements are also

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					D. functioning & on the economy of the cities; I. logistic movements will be efficient & the costs will be decreased. II. logistic movements will be restricted & the costs will be decreased. **III. logistic movements will not be efficient & the costs will be increased.** IV. logistic movements will not be efficient & the costs will not be increased.	**B. stores are kept with the required needs, transfers to houses are made without any obstacles,** C. houses are not kept with the required needs, transfers to houses are made seldom, D. stores are kept with the required payments, transfers to houses are made once a week. I. everything is supplied to everywhere & their trashes are not taken away as well. II. everything is not supplied to everywhere & their trashes are not taken away as well. III. only necessary things are supplied & their trashes are taken away as well. IV. **everything is supplied to everywhere & their**	related with the decisions taken by the countries. B. social & economical situations, changes in the populations & payment requirements are also related with the decisions taken by the authorities. **C. social & economical situations, changes in the climate & energy requirements are also related with the decisions taken by the authorities.** D. social & economical situations, changes in the economic situations & payment requirements are also related with the decisions taken by the citizens.

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						trashes are taken away as well.	
			5		KN520/5: Cities are very important locations for; A. the transfer of materials B. the transfer of knowledge, C. the economy, **D. solid-waste stations**	SK520/5: In order to have comfort & safety at the cities, **A. they are needed to be optimised for the knowledge with the supplement of keeping the cities as charming locations for working & living.** B. they are needed to be optimised for the knowledge with the supplement of keeping the cities as charming locations for factories & trucks. C. they are needed to be optimised for the economy with the supplement of keeping the cities as charming locations for warehouses. D. they are not needed to be optimised for the knowledge with the supplement of keeping	RA520/5: if the logistics necessities are not done properly, A. this will not lead to disruptions in the city logistics & it will cause to have a clean environment. B. this will lead to disruptions in the city logistics & it will cause to a clean environment. C. this will lead to a comfortable transport in the city logistics & it will cause to pollution. D. **this will lead to disruptions in the city logistics & it will cause to pollution.**

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						the cities as charming locations for children.	
			4		KN520/4: European Commission gave utmost importance for the; A. increase of the carbon dioxide in urban logistics **B. reduction of the carbon dioxide in urban logistics** C. reduction of the sulphur in urban logistics D. increase of the sulphur in urban logistics	SK520/4: City logistics effects the environment in respect with; **A. greenhouse emissions, pollution of noise, air quality & damage of the road.** B. greenhouse gases, pollution of animals, air quality & damage of the economy. C. greenhouse emissions, pollution of flowers, house quality & damage of the road. D. green house pollution, decrease of noise & air quality & quality of the road.	RA520/4: Buying on-line will be able to; A. increase the costs for the delivery to the people & decrease the efficient delivery to the customers. B. decrease the costs for the delivery to the people & decrease the efficient delivery to the customers. **C. decrease the costs for the delivery to the people & increase the efficient delivery to the customers.** D. increase the costs for the delivery to the people & increase the efficient delivery to the customers.
	5.3 Solutions for the problems of urban logistics	5.3 Solutions for the problems of urban logistics	6	GLA530: Will be able to learn, understand & solve the problems in urban logistics & be able to supply green urban logistics.	KN530/6 Elements of Urban Logistics are _____(A-D) *(complete with the appropriate words)* A. environment, animals, distribution centres, plants, shopping malls, logistic companies.	SK530/6 Environmental space means _____(A-D), _____(I-IV) *(complete with the appropriate words)* **A. respect for the environment and the**	RA530/6 Many public authorities see urban logistics_____(A-D), _____(I-IV) *(complete with the appropriate words)* A. as an opportunity to improve the quality of

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					B. suppliers, consumers, environment, plants, shopping malls, logistic companies. C. **suppliers, consumers, distribution centres, airports, shopping malls, logistic companies.** D. environment, consumers, distribution centres, plants, warehouses, logistic companies.	**rational use of natural resources,** B. respect for the people and consuming the natural resources, C. respect for the plants and the rational use of goods, D. respect for the animals and the rational use of wastes, I. traditionally regarded as a allowance in usage of goods. **II. traditionally regarded as a restriction in logistics.** III. traditionally regarded as a restriction in warehouses. IV. traditionally regarded as a restriction in restaurants.	life, decrease the accessibility of the urban population, B. as an opportunity to lower the quality of life, decrease the accessibility of the urban population C. as an opportunity to decrease the quality of life, decrease the accessibility of the urban population **D. as an opportunity to improve the quality of life, increase the accessibility of the urban population.** I. or create and decrease the employment of sensible populations. II. or create and improve the unemployment of sensible populations. **III. or create and improve the employment of sensible populations.**

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							IV. or create and lower the employment of sensible children.
			5		KN530/5: One of the precautions for green urban logistics is: A. Decreasing the workload depending on vehicle capacity, leaving empty spaces in the vehicles B. Optimization of workload depending on economic capacity, leaving empty spaces C. Non-optimization of workload depending on vehicle capacity, having empty vehicles D. **Optimization of workload depending on vehicle capacity, avoiding empty vehicles**	SK530/5: Which one Is not the main problem of Urban Logistics? A. Traffic Congestion B. Environmental Problems C. Poor utilities of vehicles D. **Living organisms**	RA530/5: Which one is not the precaution of the green urban logistics? A. Improvement of the situational awareness of traffic circulation in the city, B. Improvement of road maintenance, especially in winter C. Decreased pollution through optimized routing & parking optimization of freight vehicles, D. **Increasing the traffic congestion in the city centre through offering traffic planners with less accurate tools.**
			4		KN530/4: In urban freight transportation; A. it is seen that almost all of them are done by ships & this brings some problems together.	SK530/4: It is needed to set goals & set some rules while considering; A. the problems of airplanes, building	RA530/4: For the objectives & benefits in urban logistics; **A. Reduce the effects of troubles caused by greenhouse gas &**

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					B. B.it is seen that almost all of them are done by trains & this brings some problems together. C. **it is seen that almost all of them are done by road & this brings some problems together.** D. it is seen that almost all of them are done by air & this brings some problems together.	pollution, noise, security & violations. B. the problems of economy, air non-pollution, noise, security & violations. C. the useful side of congestion, air pollution, noise, security & non violations. D. **the problems of congestion, air pollution, noise, security & violations.**	**other atmospheric pollutant emissions.** B. Increase the effects of troubles caused by greenhouse gas & other atmospheric pollutant emissions. C. Reduce the effects of troubles caused by oxygen & other atmospheric pollutant emissions. D. Increase the effects of troubles caused by oxygen & other atmospheric pollutant emissions.
	5.4 Elements of urban logistics	5.4 Elements of urban logistics	6	GLA540: Will be able to know the Environmental Goals in Urban Logistics & derive other goals for the improvement of logistics in the cities.	KN540/6: Environmental Goals in Urban Logistics are _____(A-D), _____(I-IV) *(complete with the appropriate words)* **A. traffic and noise reduction,** B. nature and car increment, C. traffic and noise increment, D. traffic and car increment,	SK540/6: Environmental Goals in Urban Logistics are _____(A-D), _____(I-IV) *(complete with the appropriate words)* A. Increment of the pollution in air like nitrogen dioxide & oxygen, (lead, benzene, ozone and aerosols), B. Reduction of the dirt in cars like nitrogen carbon & carbon monoxide, (lead,	RA540/6: The main objective of the solution for urban logistics is to plan _____(A-D) and _____(I-IV) *(complete with the appropriate words)* **A. the cargo movements at the city or regional scale by separation of living areas and production areas within the city** B. the car movements at the city or regional scale by putting living

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					I. increase other forms of disturbance, physical barriers and vibration, decreasing overall safety. II. reduce other forms of disturbance, physical barriers and vibration, improving cars. III. increase other forms of disturbance, physical barriers and vibration, improving overall logistics. **IV. reduce other forms of disturbance, physical barriers and vibration, improving overall safety.**	benzene, ozone and aerosols), **C. Reduction of the pollution in air like nitrogen dioxide & carbon monoxide, (lead, benzene, ozone and aerosols),** D. Increment of the pollution in plants like nitrogen dioxide & carbon monoxide, (lead, benzene, ozone and aerosols), I. reduction of food that affect climate change. **II. reduction of emissions that affect climate change.** III. increment of cars that affect climate change. **IV.** reduction of logistics that affect children.	areas and production areas together within the city C. the train movements at the city or regional scale by gathering of living areas and production areas within the city D. the airplane movements at the city or regional scale by fixing the living areas and production areas within the city I. establishing a difference between car types instead of air transport. II. establishing a balance between living types instead of buildings. III. establishing a balance between train types instead of train transport. IV. **establishing a balance between transport types**

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							instead of road transport.
			5		KN540/5: Increase of energy efficiency can be supplied by the achievement of the …….. of the profitability of the complete city …… by the …… of the vehicles' energy. A. Development, car system, efficiency, movement B. Improvement, building system, efficiency, types **C. Improvement, logistics system, efficiency, energy** D. development, train system, efficiency, position	SK540/5: When the product costs of logistics are reduced, what happens to logistics chain and to urban competitiveness? **A. logistics chain is optimised, urban competitiveness is increased** B. B.logistics chain is neglected, urban competitiveness is decreased C. logistics chain is optimised, urban competitiveness is decreased D. logistics chain is generalized, urban competitiveness is neglected	RA540/5: Environmental Goals in Urban Logistics is_____(A-D) and _____(I-IV) *(complete with the appropriate words)* A. increasing the consumption of urban space for transportation infrastructures. B. reducing the consumption of urban space for buildings. C. increasing the use of urban space for cars & trains. **D. reducing the consumption of urban space for transportation infrastructures.** I. neglecting the problems of distribution points. II. omitting the problems of distribution points.

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							III. solving the problems of distribution points. IV. forgetting the problems of distribution points.
			4		KN540/4: Developed freight flow does not aim to: A. Energy Efficiency B. Air Quality & Noise C. Customer satisfaction **D. Unsafety of the transport**	SK540/4: It is important to do the delivery ……. in the logistic system. It ……. the noise of the transportation vehicles and auxiliaries and also lowers the noise related to the …… of the products & loading/unloading actions. A. in the morning, lowers, unpackaging & handling B. at nights, highers, packaging & unhandling **C. at nights, lowers, packaging & handling** D. at noon, highers, packaging & handling	RA540/4: To increase the energy efficiency of the system is to find solutions for; A. to reduce the number of kms per kg / goods, B. to increase the efficiency of deliveries, **C. to increase leisure trips,** D. to reduce shopping trips
	5.5 Environmental goals in	5.5 Environmental goals in urban	6	GLA550: Will be able to develop innovative ways for the vehicles in the delivery systems & make use of	KN550/6: Define future optimal urban freight _____(A-D) *(complete with the appropriate words)*	SK550/6: When the complete organisation of the transportation is	RA550/6: Establish systems to exchange loads_____(A-D)

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	urban logistics	logistics		these benefits in green logistics.	A. aeroplane sizes & architectures from citizens perspective. **B. vehicle sizes & architectures from multi-stakeholder perspective.** C. cars types & architectures from children's perspective. D. trains sizes & architectures from citizens perspective.	improved and_____(A-D) and _____(I-IV) *(complete with the appropriate words)* A. when the congestion is increased, it means the unwanted miles driven will be increased B. when the congestion is increased, it means the unwanted miles driven will be decreased **C. when the congestion is decreased, it means the unwanted miles driven will be decreased** D. when the congestion is decreased, it means the unwanted miles driven will be increased I. it will also increase the unnecessary stops and the time gained accordingly. **II. it will also decrease the unnecessary stops and the time wasted accordingly.**	*(complete with the appropriate words)* A. between trains (small & large) and also with other car types with integrated multifunctional procedure. **B. between vehicles (small & large) and also with other transportation types with integrated multifunctional procedure.** C. between trucks (small & large) and also with other types of trucks with integrated multifunctional procedure. D. between vehicles (small & large) and also with other aeroplane types with integrated multifunctional procedure.

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						III. .it will also increase the unnecessary stops and the time wasted accordingly. **IV.** it will also increase the necessary stops and the load wasted accordingly.	
			5		KN550/5: Make it easy for the access to distribution places; _____(A-D) *(complete with the appropriate words)* A. Supply the manoeuvre to the people & give assistance to the pedestrians. B. Supply the manoeuvre to the trucks & give assistance to the children. **C.** Supply the manoeuvre to the trains & give assistance to the customers. **D. Supply the manoeuvre to the vehicles & give assistance to the drivers.**	SK550/5: Consumers have an easy way to access to the goods _____(A-D) *(complete with the appropriate words)* **A. avoiding travelling to shops and e-commerce gives a good chance for the requirement of the goods to customers without going anywhere.** B. allowing travelling to shops and e-commerce does not give a good chance for the requirement of the goods to customers without going home. C. allowing to go shops and e-commerce gives a good chance for the	RA550/5: Establish the logistics system in a_____(A-D) *(complete with the appropriate words)* A. standardized & modular way (coherent with non-regular containers) for a larger load factor and interoperability among same transport systems and modes. B. non-standardized & modular way (coherent with regular cars) for a large load factor and interoperability among different transport systems and modes. C. **standardized & modular way (coherent with**

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						selling of the goods to customers by going to shops. D. avoiding travelling to shops and e-commerce gives a good chance for the requirement of the goods to customers by going shops.	**regular containers) for a better load factor and interoperability among different transport systems and modes.** D. standardized & modular way (coherent with regular trains) for a better truck and interoperability among different transport systems and modes.
			4		KN550/4: In retailing, what is becoming very popular nowadays? A. Using cars B. Using trains **C. Using e-commerce** D. Using airplanes	SK550/4: E-commerce logistic method that brings a solution to the problem of the transportation to the consumer, must be analysed with; A. the service, cost, amount of space left & with the evaluation of the citizens. B. the travel, cost, amount of space used & with the evaluation of the types of the cars. **C. the service, cost, amount of space used & with the**	RA550/4: Establish measurement ranks with respect to _____(A-D) *(complete with the appropriate words)* **A. loading methods (volume, mass, etc.) making the complete control for the urban traffic access & the operation of the whole network.** B. unloading methods (cars, trucks, etc.) making the complete control for the vehicles & the

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						evaluation of the environmental clauses. D. the drivers, cost, amount of space used & with the evaluation of the trucks.	operation of the whole network. C. loading methods (volume, mass, etc.) making the complete control for the citizens & the operation of the whole buildings. D. unloading methods (volume, mass, etc.) making the complete control for the highways & the operation of the whole people.

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3.3 BLENDED LEARNING COURSES DESCRIPTION

Module title	**1. Basic Knowledge of Logistic**
Duration	8 hours (1 day)
Description of the module	In this module we present a historic evolution of logistic in its broadest sense. It is essential to understand the actual concept of Logistic. In it we show the principal elements, the distribution strategies and the supply chain of Logistics. We explain the fourth differences sections of Logistic management: provisioning logistics, storage logistics, production logistics and distribution logistics. And a detailed description of different transport mode.
Learning objectives	LO1: To get acquainted with statistical data in the field of waste management. LO2: To get acquainted with waste generation and European waste management approaches in circular economy. LO3: To get acquainted with European legislation in the field of waste management.
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-25 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**1.1 Impacts of Logistics**
Duration	20 hours (1 week – 4 hours per day)
Description of the module	Current logistic industry is the mainstay of the national economy. However, although logistic activities produce several benefits and has inevitable negative ecological effect at the same time. In this module benefits vs paradoxes of conventional logistic are summarized. Environmental impacts of each main component in logistic sector namely; transportation, warehouses and packaging are discussed in terms of climate change, biodiversity, air quality (Non-CO2 greenhouse gas emissions, black carbon, and aerosols), noise pollution, wastes, water pollution, soil quality and biosecurity.
Learning objectives	LO1: To get acquainted with the basic environmental impacts of conventional logistic. LO2: To get acquainted with the impacts of transportation on environment such as climate change. LO3: To get acquainted with the impacts of warehouses on environment. LO4 : To get acquainted with the impacts of packaging on environment.
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-23 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**1.2 Need for Green Logistics**
Duration	10 hours (1 week –2 hours per day)
Description of the module	Depending on the SWOT analysis, logistic sector is questioned in terms of implementation, legislations, policies, problems, solutions, bottleneck in different countries discussed and evaluated in this chapter. Most problematic dimensions are given and need analysis for green logistic in general for all partner countries are summarized. Then after demonstrating the necessity of green logistics applications, current training opportunities, courses, programs in this field are examined and deficiencies are revealed. Finally, factors affecting green logistic activities are summarized.
Learning objectives	LO1: To get acquainted with needs for green logistics. LO2: To get acquainted with factors effecting green logistic applicaitons
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-4 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**2. What is Green Logistics (2.1 Green logistic and sustainable development: included)**
Duration	20 hours (1 week – 4 hours per day)
Description of the module	The objective of this concept is to bring green aspect into all the different components of logistics systems. It means green the sourcing raw materials, green the manufacturing, green warehousing, green the transportation, green the package, green the distribution and manage the waste from the system. Different definitions to green logistics (GL) are given. Ecological, economic and social dimensions of the GL in terms of sustainable development and the overall aim of the green logistics for companies are discussed. Green logistics is correlated to two others concept that focus on environmental issues in the context of supply chain: green supply chain management and reverse logistics. In this module, the term green logistics which is often used interchangeably with reverse logistics, is distinguished; green logistics includes logistics activities that are first motivated by environmental considerations in contrast to reverse logistics which refers to (logistics) activities all the way from used products no longer required by the user to products again usable in a market. Similarly, basic knowledge of GL and green supply chain management terms and their relation is explained.
Learning objectives	LO1: To get acquainted with the concept of green logistics. LO2: To get acquainted with contribution of green logistics to sustainable development LO3: To differentiate green logistics with reverse logistics and green supply chain management
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-9 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**2.2 Fields of action, stakeholders and requirements**
Duration	20 hours (1 week – 4 hours per day)
Description of the module	The emission of greenhouse gases has been increasing steadily worldwide since the beginning of industrialization. Logistics contributes markedly to that emission. Central trends for sustainable logistics have been detected as: (1) Logistics is what counts - it is not a mass product. (2) Technological change is achieved by the close cooperation of companies, financial institutions and the public sector. (3) Cooperative approaches are increasingly seen as levers for sustainability; even competitors will work more closely together. (4) The business models of logistics companies are changing as sustainable innovations open up new business opportunities. (5) CO2 labels are being standardised. (6). CO2 emissions are being priced, and (7) CO2 pricing will lead to stricter regulatory measures. The four primary stakeholder groups and their requirements for Green Logistics are: companies, customers, politics and society. The economic sensitisation of stakeholder groups, which are assigned to the various stakeholders are defined while opportunities and risks have been revealed.
Learning objectives	LO1: To get acquainted with the field of actions of green logistics. LO2: To get acquainted with current trends for sustainable logistics. LO3: Will be able to detect and understand four primary stakeholders group. LO4: Will be able to indicate and interpret results of green logistics based on opportunities and risks.
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-9 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**3.1 Green Transport**
Duration	40 hours (1 week - 8 hours per day)
Description of the module	Green transport is an essential part of the green logistic concept. The module shows the CO_2 balance of all modes of transport. It presents current modal split and the development in individual countries and in the EU. The module also deals with the environmentally relevant technical further development of vehicle drive systems and the possibilities of organisational optimisation such as route and load optimisation of green transport.
Learning objectives	LO1: To get acquainted with important terms of green transport like modal split and CO_2 footprint. LO2: To get with the most important technical developments in the field of green transport. LO3: To get acquainted with the important organisational environmental optimisation possibilities in green transport.
Steps of competence acquisition:	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself – test items 1-26 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**3.2 Green Warehouse**
Duration	40 hours (1 week - 8 hours per day)
Description of the module	Green warehouse is an essential component of green logistics, especially in the area of energy efficiency. 24% of CO_2 emissions in the transport storage sector are attributable to the storage sector. The module considers both the macro and micro perspective of the green warehouse concept. In the macro perspective report the choice of the storage location is discussed. In the micro-perspective, the area of environmentally optimised factors of the storage infrastructure is particularly important.
Learning objectives	LO1: To get acquainted with the essential environmental factors of the choice of a warehouse location. LO2: To get with the most important technical developments in the field of green warehouse.
Steps of competence acquisition:	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself – test items 1-25 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**3.3 Green Packaging**
Duration	5 hours (1 week - 1 hour per day)
Description of the module	In logistic sector, when the packaging is performed according to the green & environmentally friendly way, this will lead to a more convenient & successful carriage of the transports and at the same time this will mean a less consumption of the nature & the environmental resources by using less amount of paper, plastic & cardboard. By Green packaging, which is also known as sustainable packaging, recycling is easily done and beneficial for the individuals and for the environment, and supply safety for the nature, leading to a greener world for the society and for the future coming generations. It is also an intention to combine ideas on the suitability of present necessities on biodegradability & composability in the green packing. There is no adequate differentiation between biodegradable materials that are biodegrading in natural environments & compostable materials that are only biodegrading in industrial composting plants. So, it is compulsory to combine the ideas on the economic, social & environmental effects from the improvement of the biodegradability necessities of the packing materials taking into consideration of the visibility of biodegradable packing to users.In reality, making and implementing strategic decisions with an environmental approach increases the power of businesses and provides a competitive advantage. Because environmental awareness is a concept that directly addresses the customer and where the customer's satisfaction is one of the most important issues that need to be addressed by businesses today. Even if the green logistics practices that will be put into practice with strategic decisions will lead to extra costs for the businesses in the short term, it will increase the profitability and market shares of the businesses as a result of the customer satisfaction that will be created in the long term and accordingly and will provide a competitive advantage among other businesses. Followings are detailed in the training module; EU Regulations, Reduction of using the plastic carrier bags, Awareness for a greater visibility for biodegradable packing, Green approach in environmental management, Packing materials which are recyclable & biodegradable, Creation of your Environment friendly Packing Methods, Packaging makes pollution in our environment, Creates pollution in solid waste, Creates pollution in liquids & gases, Harms of the diffusion of pests & bacteria, Using green Packaging to get rid of the pollution (Reduce, reuse, reclaim, recycle, degradable).
Learning objectives	LO1: To learn about green packaging in logistics sector. LO2: To get acquainted with European Commission's directives & rules and learn how to apply these principles in green packaging. LO3: To learn how to make environmental friendly green packaging and get acquainted in the packing methods.
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-7

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	- work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**3.4 Green Logistics Data Collection and Management**
Duration	40 hours (1 week - 8 hours per day)
Description of the module	The module focuses on the seven trends in the green logistics data collection, environmental management systems such as ISO 14001 certification and environmentally oriented cost accounting. The importance of environmentally oriented controlling is presented and individual instruments of green controlling are described in detail. In addition, a list of key environmental indicators is also compiled.
Learning objectives	LO1: To get acquainted with the seven trends in the green logistics data collection. LO2: To get acquainted with the concept of ISO 14001. LO3: To get acquainted with the concept of green target costing.
Steps of competence acquisition:	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-25 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**3.5 Waste management**
Duration	40 hours (1 week - 8 hours per day)
Description of the module	Waste management as an important component of green logistics. The production, distribution and consumption of products generates an enormous amount of different types of waste. In order to improve the waste position, producers should focus on (a) current waste legislation and approaches, (b) cost-benefit and product life-cycle analyses to reduce the amount of waste they produce, (c) the implementation of closed-loop management, including a circular economy also with potential of secondary raw materials, (d) the application of sustainable supply chain networks and (e) the improvement of the environmental position. In order to implement the principles of waste management, companies are forced to close open process chains in which the majority of the waste produced must be returned to the production or consumption processes. The waste should be recovered in a recycling process to ensure a cycle. This promotes both material efficiency and a positive impact on the environment, as only a minimum of the goods and waste produced needs to be absorbed by the environment.
Learning objectives	LO1: To get acquainted with statistical data in the field of waste management. LO2: To get acquainted with waste generation and European waste management approaches in circular economy. LO3: To get acquainted with European legislation in the field of waste management.
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-24 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**4. Benefits of Green Logistics**
Duration	30 hours (1 week – 6 hours per day)
Description of the module	In this module, first, environmental benefits of green logistics are examined, estimated CO2 savings are given. Then social and economic benefits; use of renewable energy, waste products quantity and reduction of cost; competitiveness and tax reduction, health benefits are explained. Actually, it is not possible to distinguish between economic, social and ecological benefits of green logistics. All benefits directly or indirectly affect each other. The unification of the economic benefits, social benefits and environmental benefits is essential. It is what the goals of sustainable development. For this reason, the contributions of green logistics to sustainable development will be examined in order to reveal the relations and to sum up the benefits in the common denominator. In the final section of the chapter, benefits of green logistics was sum up according to the each component; green transportation, warehousing, packaging, Standardisation, network optimization.
Learning objectives	LO1: To get acquainted with the environmental benefits of GL. LO2: To get acquainted with the economic benefits of GL. LO3: To get acquainted with the social benefits of GL. LO4: To get acquainted with the benefits of GL for each component.
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-23 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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Module title	**5. Urban Logistics**
Duration	40 hours (1 week - 8 hours per day)
Description of the module	**Urban logistics / City logistics** mean to supply freight distribution in urban areas, developing plans raising its complete proficiency against traffic jam & emissions. Its aim is to supply assistance for a proper & efficient transfer of products in the cities & to create the best solutions to consumers' requests. 'Urban logistics' is also described as the transportation of the products, materials & waste within, into, from, out, within or through the urban place. Thus, Urban Logistics provides the mobility of urban freight through the transportation of goods by or for commercial entities taking place in an urban area. It is one of the most important focus topics in the European Commission's Urban Mobility Package and also necessary for cities to operate successfully and to establish a good harmony with the urban traffic. In urban freight transportation, it is seen that almost all of them are done by road & this brings some problems together. It is needed to set goals & set some rules while considering the problems of congestion, air pollution, noise, security & violations. Acceptance areas, urban logistic and policy measures must be developed to reduce these important & negative impacts of freight traffic. Simple developments like choosing a better method & means of transport, better loading types, optimizing the transport path & reaching to cargo places can be very cheap & decrease the cost of urban logistics. Even though, the evaluation of goods services in urban areas is always thought as a complex problem, to have the same methodological ways will be a better way for a more suitable urban goods transport on the whole system. The main objective of the solution is to plan the cargo movements at the city or regional scale. Storage, maintenance-repair, loading-unloading, weighing, load division-assembling, packaging, etc., which are the components of all modes of transport, including all companies of logistics and transportations and public / private institutions, it is tried to have fast, low-cost, safe, environment-friendly transfer areas and equipment between transportation services. To improve the quality of the city environment, air quality must be increased & noise must be reduced. It must be expressed that the items corresponding to the air pollution differ from urbans to urbans & that corresponding part of transport to air pollution in urban places changes as well. Developing innovative vehicles in urban freight activities in the urban logistics will supply success & comfort in the logistics sector. Trucks and vans are stressed from congestion and vehicles are stopped in crowded traffic jams, they drive unwanted kilometres to find a place to park and roads are closed by cars & vehicles which are parked to carry the products. Dual parking by the vehicles is usually done as a practical way out for faster distribution of the goods & this leads to problems in the traffic which completely influences the comfort in logistic transports & make a stress on the people in the other vehicles. When the complete organisation of the transportation is improved and when the congestion is decreased, it means the unwanted miles driven will be decreased and it will also decrease the unnecessary stops and the time wasted accordingly. Following topics are in the training module; 1.Introduction of Urban Logistics, 2. EU Policies & Directives,3. Main Problems in Urban Logistics, 3a.Public & Private Stakeholders' Aims & Benefits in Urban Logistics, 3b. Definition of Sustainable Logistics, 3c. Precautions for Urban Logistics, 3d. Elements of Urban Logistics, 4. Environmental Goals in Urban Logistics, 4a.Logistic Villages, 4b.

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	Energy Efficiency, 4c. Air Quality & Noise, 4d. Customer Satisfaction, 4e.Safety & Security, 5. Developing Innovative Ways for the Vehicles in the Delivery Systems 5a. E-Commerce
Learning objectives	LO1: To learn about Urban Logistics. LO2: To get knowledge about European Commission's directives & rules and learn how to apply these principles in Urban logistics. LO3: To learn the main problems in Urban Logistics and get acquainted how to solve them. LO4: To get trained in the environmental goals in Urban Logistics. LO5: To learn to develop Innovative ways for Vehicles in the Delivery Systems.
Steps of competence acquisition	Description of the steps to follow within the module: - check the goal and learning objectives of the unit - watch introduction video/animation - check readings and other learning material - work with text – introduction and get engaged - test yourself- test items 1-25 - work with text, forum, blogs, peer and/or tutor interactions… …….
Material	
Learning content	Readings, videos, presentations, animations, hypertext, peer and tutor feedback, chat, blog, wiki
Learning content type in Moodle	Text page, quiz, test, forum, hypertext ,etc.
Activity/Task	On-line learning, off-line learning, peer-peer or tutor interactions…
External resources	Literature and other sources provided as references/hypertext in Green Logistics book.
Evaluation	
Evaluation content	Multiple-choice test, available for EQF level 4-6. A trainee on his/her own will may select the competence profile to be tested.

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4. PROFESSIONAL MISSION STATEMENT AND PROFESSIONAL GOALS

Please, describe your intentions for mission realization and goals achievement (max 1 page).

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5. EUROPASS- CV, LANGUAGE PASSPORT AND MOBILITY TOOL

Log in Green project will use a platform of Europass which helps (1) citizens communicate their skills and qualifications effectively when looking for a job or training. (2) employers understand the skills and qualifications of the workforce, and (3) education and training authorities define and communicate the content of curricula. Europass platform offers both official documents and supporting templates and cloud archiving of trainee's or learner's acquired knowledge, skills, competencies and other abilities recognised in EU labour market. https://europass.cedefop.europa.eu/

Log in Green will use the following Europass documents to make one's skills and qualifications clearly and easily understood in Europe:

a. **The Curriculum vitae** helps one present skills and qualifications effectively and clearly. A template is freely available as an annex to this dossiere and by clik on the link at: https://europass.cedefop.europa.eu/about-europass

b. **Lange passport as** self-assesment tool for language skills and qualifications helps one to present language profficency before the mobility.

c. **The Europass Mobility** which records the knowledge and skills acquired in another European country. It is aimed for any person moving to a European country to learn or acquire a work experience, whatever their age or level of education. This document is issued by education and training authorities. Two partner organizations involved in the mobility project, the first in the country of origin and the second in the host country complete it. The partners may be universities, schools, training centres, companies, NGOs, etc. Before you obtain it, please see examples of filled mobility tool in different langue version available at: https://europass.cedefop.europa.eu/documents/european-skills-passport/europass-mobility/examples. To obtain it, please contact the organisation sending you abroad and ask them to contact their National Europass Centre (https://europass.cedefop.europa.eu/about/national-europass-centres). See also about Mobility tool here: https://europass.cedefop.europa.eu/documents/european-skills-passport/europass-mobility. Template is available as an annex to dossier.

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6. INDIVIDUAL COMPETENCIES PROFILE

Referring to the LOG in Green competence matrix and Green abilities (see table 4), please, indicate the already acquired competences and/or the stage of competence development you have reached at a certain point in a current training. Link to individual Competency profiler: https://docs.google.com/spreadsheets/d/1YInvQ6JUCI933TZoNFegjRdfBbR0rMM4CDswuogKsVI/edit?usp=sharing.

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7. COMPETENCE PROFILE CERTIFICATE

Competence profile certificate will be issued by education or training provider institution, which is registered at YOUTHPASS platform: https://www.youthpass.eu/en/

Each trainee or learner who past examination will be awarded on the basis of the individual profile which is reflected in Europass Mobility tool obtained upon completion of a training course in the foreseen period. To pass the exam on the professional competence, a trainee or learner must score at least 50 % measured with Log in Green test for certification. A grading scale for assessment of ECVET learning outcomes is a 3-level scale:

1-Satisfactory (needs constant guidance and instruction);
2-Good (able to perform according to instructions)
3-Excellent (able to work independently and creatively)

Training provider just make registration in YOUTHPASS portal and make transcription of acquired competences from the competence matrix and mobility tool regarding the learning outcomes on knowledge, skills, and responsibility and autonomy competency with EQF level description.

Training provider (institution representative) have to login in Youthpass portal for generating certificate at https://www.youthpass.eu/en/login/

Generated certificates are automatically archived in YOUTPASS system (cloud storage) and ready for print as hard copy.

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8. MOBILITY CHART

Log in Green mobility is envisaged across three distinct stages that cover planning and preparation (Before Mobility), delivery and implementation (During Mobility) and evaluation and follow-up (After Mobility) (see Figure 7).

The mobility scheme is based on an Europass mobility tool that provide basis for understanding, implementation, and application of international vocational education and training placement.

Before mobility

During this phase a partnership between competent training bodies/institutions is established. For this purpose a training provider abroad is searched for and chosen on the basis of the training opportunities/programmes it offers and their compatibility with the sending institution and national requirements (accreditation requirements, language proficiency, etc.).

The next step is the transmission of statement of purpose in which the general goal of the mobility procedure initiated is stated by both home- and host-institutions. The mutual willingness and as well as details concerning the mobile learners are specified and declared through official Mobility tool which substitutes the memorandum of understanding. This tool sets the framework for credit transfer and states the mutual acceptance of the status and procedures of the training providers' institutions. The same time this tool can present as well the learning agreement.

After signing of the Mobility tool between the training provider in the home country and the training provider in the host country, the latter must assemble and send an Information Package to the training provider in the home country to be transmitted to the mobile learner. The information package comprises instructions and information about the requirements in the host country for stay permission, any financial matters, insurance, language requirements, accommodation, cultural issues, etc.). Sending body specific documents are Europass langue passport and Europass certificate supplement in a case that training provider is not able to proved/issue YOUTPASS certificate. Europass documents are available here: https://europass.cedefop.europa.eu/documents

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During Mobility

This phase starts with the beginning of the training period abroad. During it the mobile learner completes the preliminary negotiated in the Mobility tool. During this period both training providers in the home- and host institutions stay in touch directly or through the mobile learner for further clarifications on the training process. If necessary, the training programme specified in the Mobility Tool may be amended officially. Thus the mobility activities will be monitored in order to assure the highest possible quality of the training and communication to the mobile learners when they are abroad so that they have a reference point for any professional or personal issue.

Upon completion of the training period, the training provider in the host country is responsible to issue a Competence-based Certificate for the newly acquired Learning Outcomes during the stay abroad. At the end of the stay, this Competence-based Certificate is uploaded in Youthpass system, also can be possible to upload to the Europass system, and as a hard copy can be sent to the training provider in the home country. The training provider remains responsible for the quality, the contents and the recognition of the mobility period, i.e. for the assessment procedures that are used in validating and recognising the learning outcomes incl. non-formal and informal experiences and unplanned but achieved learning outcomes.

After Mobility

After completion of the stay abroad, the mobile learner returns to his/her home institution. The home institution training provider verifies whether all formal clauses in the Mobility tool have been minded. The Competence-based Certificate is examined for the new competences achieved by the mobile learner. The newly acquired learning outcomes are accumulated and integrated as a part of the Mobile Learner current qualification. If certain competences are missed their compensation is organised according to the clauses stipulated in the Mobility tool.

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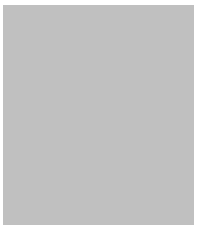
ANNEX 1: Europass CV

PERSONAL INFORMATION

Replace with First name(s) Surname(s)

[All CV headings are optional. Remove any empty headings.]



Replace with house number, street name, city, postcode, country

Replace with telephone number Replace with mobile number

State e-mail address

State personal website(s)

Replace with type of IM service Replace with messaging account(s)

Sex Enter sex | Date of birth dd/mm/yyyy | Nationality Enter nationality/-ies

JOB APPLIED FOR
POSITION
PREFERRED JOB
STUDIES APPLIED FOR
PERSONAL STATEMENT

Replace with job applied for / position / preferred job / studies applied for / personal statement (delete non relevant headings in left column)

WORK EXPERIENCE

[Add separate entries for each experience. Start from the most recent.]

Replace with dates (from - to)

Replace with occupation or position held

Replace with employer's name and locality (if relevant, full address and website)

- Replace with main activities and responsibilities

Business or sector Replace with type of business or sector

EDUCATION AND TRAINING

[Add separate entries for each course. Start from the most recent.]

Replace with dates (from - to)

Replace with qualification awarded

Replace with EQF (or other) level if relevant

Replace with education or training organisation's name and locality (if relevant, country)

- Replace with a list of principal subjects covered or skills acquired

PERSONAL SKILLS

[Remove any headings left empty.]

Mother tongue(s) Replace with mother tongue(s)

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
Replace with language	Enter level	Enter level	Enter level	Enter level	Enter level
	Replace with name of language certificate. Enter level if known.				
Replace with language	Enter level	Enter level	Enter level	Enter level	Enter level
	Replace with name of language certificate. Enter level if known.				

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

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Communication skills

Replace with your communication skills. Specify in what context they were acquired. Example:
- good communication skills gained through my experience as sales manager

Organisational / managerial skills

Replace with your organisational / managerial skills. Specify in what context they were acquired. Example:
- leadership (currently responsible for a team of 10 people)

Job-related skills

Replace with any job-related skills not listed elsewhere. Specify in what context they were acquired. Example:
- good command of quality control processes (currently responsible for quality audit)

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Enter level	Enter level	Enter level	Enter level	Enter level

Levels: Basic user - Independent user - Proficient user
Digital competences - Self-assessment grid

Replace with name of ICT-certificates

Replace with your other computer skills. Specify in what context they were acquired. Example:
- good command of office suite (word processor, spread sheet, presentation software)
- good command of photo editing software gained as an amateur photographer

Other skills

Replace with other relevant skills not already mentioned. Specify in what context they were acquired. Example:
- carpentry

Driving licence

Replace with driving licence category/-ies. Example:
B

ADDITIONAL INFORMATION

Publications
Presentations
Projects
Conferences
Seminars
Honours and awards
Memberships
References
Citations
Courses
Certifications

Replace with relevant publications, presentations, projects, conferences, seminars, honours and awards, memberships, references. Remove headings not relevant in the left column.
Example of publication:
- How to write a successful CV, New Associated Publishers, London, 2002.

Example of project:
- Devon new public library. Principal architect in charge of design, production, bidding and construction supervision (2008-2012).

ANNEXES

Replace with list of documents annexed to your CV. Examples:
- copies of degrees and qualifications;
- testimonial of employment or work placement;
- publications or research.

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ANNEX 2: Europass languge passport

Replace with First name(s) Surname(s)

Mother tongue(s)	Other language(s)
Replace with mother tongue(s)	Replace with name of other languages

Replace with name of language				
Self-assessment of language skills				
Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	Writing
Replace with level (e.g. B1) Replace with level label (e.g. Independent user)	Replace with level (e.g. B1) Replace with level label (e.g. Independent user)	Replace with level (e.g. B1) Replace with level label (e.g. Independent user)	Replace with level (e.g. B1) Replace with level label (e.g. Independent user)	Replace with level (e.g. B1) Replace with level label (e.g. Independent user)

Certificates and diplomas			
Title	Awarding body	Date	Level*
Replace with name of certificate or diploma	Replace with name of awarding body	Replace with date of issue	Replace with level (e.g. B2)

Linguistic and intercultural experience	
Description	Duration
Using languages for study or training / Using languages at work / Using languages while living or travelling abroad / Mediating between languages (delete non relevant types of experience or replace with your own text): Replace with description of experience	Replace with dates (from - to)

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		A1 Basic User	A2 Basic User	B1 Independent user	B2 Independent user	C1 Proficient user	C2 Proficient user
Understanding	Listening	I can understand familiar words and very basic phrases concerning myself, my family and immediate concrete surroundings when people speak slowly and clearly.	I can understand phrases and the highest frequency vocabulary related to areas of most immediate personal relevance (e.g. very basic personal and family information, shopping, local area, employment). I can catch the main point in short, clear, simple messages and announcements.	I can understand the main points of clear standard speech on familiar matters regularly encountered in work, school, leisure, etc. I can understand the main point of many radio or TV programmes on current affairs or topics of personal or professional interest when the delivery is relatively slow and clear.	I can understand extended speech and lectures and follow even complex lines of argument provided the topic is reasonably familiar. I can understand most TV news and current affairs programmes. I can understand the majority of films in standard dialect.	I can understand extended speech even when it is not clearly structured and when relationships are only implied and not signalled explicitly. I can understand television programmes and films without too much effort.	I have no difficulty in understanding any kind of spoken language, whether live or broadcast, even when delivered at fast native speed, provided I have some time to get familiar with the accent.
	Reading	I can understand familiar names, words and very simple sentences, for example on notices and posters or in catalogues.	I can read very short, simple texts. I can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus and timetables and I can understand short simple personal letters.	I can understand texts that consist mainly of high frequency everyday or job-related language. I can understand the description of events, feelings and wishes in personal letters.	I can read articles and reports concerned with contemporary problems in which the writers adopt particular attitudes or viewpoints. I can understand contemporary literary prose.	I can understand long and complex factual and literary texts, appreciating distinctions of style. I can understand specialised articles and longer technical instructions, even when they do not relate to my field.	I can read with ease virtually all forms of the written language, including abstract, structurally or linguistically complex texts such as manuals, specialised articles and literary works.
Speaking	Spoken interaction	I can interact in a simple way provided the other person is prepared to repeat or rephrase things at a slower rate of speech and help me formulate what I'm trying to say. I can ask and answer simple questions in areas of immediate need or on very familiar topics.	I can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar topics and activities. I can handle very short social exchanges, even though I can't usually understand enough to keep the conversation going myself.	I can deal with most situations likely to arise whilst travelling in an area where the language is spoken. I can enter unprepared into conversation on topics that are familiar, of personal interest or pertinent to everyday life (e.g. family, hobbies, work, travel and current events).	I can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible. I can take an active part in discussion in familiar contexts, accounting for and sustaining my views.	I can express myself fluently and spontaneously without much obvious searching for expressions. I can use language flexibly and effectively for social and professional purposes. I can formulate ideas and opinions with precision and relate my contribution skilfully to those of other speakers.	I can take part effortlessly in any conversation or discussion and have a good familiarity with idiomatic expressions and colloquialisms. I can express myself fluently and convey finer shades of meaning precisely. If I do have a problem I can backtrack and restructure around the difficulty so smoothly that other people are hardly aware of it.
	Spoken production	I can use simple phrases and sentences to describe where I live and people I know.	I can use a series of phrases and sentences to describe in simple terms my family and other people, living conditions, my educational background and my present or most recent job.	I can connect phrases in a simple way in order to describe experiences and events, my dreams, hopes and ambitions. I can briefly give reasons and explanations for opinions and plans. I can narrate a story or relate the plot of a book or film and describe my reactions.	I can present clear, detailed descriptions on a wide range of subjects related to my field of interest. I can explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.	I can present clear, detailed descriptions of complex subjects integrating sub-themes, developing particular points and rounding off with an appropriate conclusion.	I can present a clear, smoothly-flowing description or argument in a style appropriate to the context and with an effective logical structure which helps the recipient to notice and remember significant points.
Writing	Writing	I can write a short, simple postcard, for example sending holiday greetings. I can fill in forms with personal details, for example entering my name, nationality and address on a hotel registration form.	I can write short, simple notes and messages. I can write a very simple personal letter, for example thanking someone for something.	I can write simple connected text on topics which are familiar or of personal interest. I can write personal letters describing experiences and impressions.	I can write clear, detailed text on a wide range of subjects related to my interests. I can write an essay or report, passing on information or giving reasons in support of or against a particular point of view. I can write letters highlighting the personal significance of events and experiences.	I can express myself in clear, well-structured text, expressing points of view at some length. I can write about complex subjects in a letter, an essay or a report, underlining what I consider to be the salient issues. I can select a style appropriate to the reader in mind.	I can write clear, smoothly-flowing text in an appropriate style. I can write complex letters, reports or articles which present a case with an effective logical structure which helps the recipient to notice and remember significant points. I can write summaries and reviews of professional or literary works.

Common European Framework of Reference for Languages (CEF): © Council of Europe

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ANNEX 3: Europass Mobility tool

Holder of the document

1 SURNAME(S) *
Replace with text

2 FIRST NAME(S) *
Replace with text

3 ADDRESS
Replace with text
Replace with text
Replace with text

4 DATE OF BIRTH
09 09 2000
dd mm yyyy

5 NATIONALITY
Replace with text

Issuing organisation

6 NAME OF THE ORGANISATION *
Replace with text

7 DOCUMENT NUMBER *
Replace with text

8 ISSUING DATE *
09 09 2000
dd mm yyyy

Sending partner

9 NAME AND ADDRESS *
Replace with text
Replace with text
Replace with text
Replace with text

10 STAMP AND/OR SIGNATURE

11 SURNAME(S) AND FIRST NAME(S) OF REFERENCE PERSON/MENTOR *
Replace with text

12 TELEPHONE
Replace with text

13 TITLE/POSITION
Replace with text

14 E-MAIL
Replace with text

Host partner

15 NAME AND ADDRESS *
Replace with text
Replace with text
Replace with text
Replace with text

16 STAMP AND/OR SIGNATURE

17 SURNAME(S) AND FIRST NAME(S) OF REFERENCE PERSON/MENTOR *
Replace with text

18 TELEPHONE
Replace with text

19 TITLE/POSITION
Replace with text

20 E-MAIL
Replace with text

* Headings marked with an asterisk are mandatory.

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Description of the mobility experience

21 OBJECTIVE OF THE MOBILITY EXPERIENCE *

Replace with text

22 EDUCATION OR TRAINING INITIATIVE IN THE COURSE OF WHICH THE MOBILITY EXPERIENCE WAS COMPLETED

Replace with text

23 COMMUNITY OR MOBILITY PROGRAMME INVOLVED

Replace with text

DURATION OF THE EUROPASS MOBILITY EXPERIENCE

24 FROM * 09 (dd) 09 (mm) 2000 (yyyy) 25 TO * 09 (dd) 09 (mm) 2000 (yyyy)

Skills acquired during the mobility experience

26A ACTIVITIES/TASKS CARRIED OUT *

Replace with text.

27A JOB-RELATED SKILLS

Replace with text

28A LANGUAGE SKILLS

Replace with text

29A COMPUTER SKILLS

Replace with text

30A ORGANISATIONAL / MANAGERIAL SKILLS

Replace with text

31A COMMUNICATION SKILLS

Replace with text

32A OTHER SKILLS

Replace with text

33A DATE *

09 (dd) 09 (mm) 2000 (yyyy)

34A SIGNATURE OF THE REFERENCE PERSON/MENTOR *

35A SIGNATURE OF THE HOLDER

* Headings marked with an asterisk are mandatory.

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Record of courses completed and individual grades / marks / credits obtained

26B STUDENT MATRICULATION NUMBER * Replace with text

27B COURSE UNIT CODE [1]	28B TITLE OF THE COURSE UNIT *	29B DURATION [2] *	30B LOCAL GRADE [3] *	31B ECTS/ECVET GRADE	32B ECTS/ECVET CREDITS [4]

Add or remove lines if required

33B ESSAY/REPORT/DISSERTATION

Replace with text

34B CERTIFICATE/DIPLOMA/DEGREE AWARDED, if any

Replace with text

35B SURNAME(S) AND FIRST NAME(S) OF MENTOR/ADMINISTRATION OFFICER *

Replace with text

36B SIGNATURE OF THE HOLDER

37B DATE OF VALIDATION *

09 09 2000
dd mm yyyy

38B NAME AND ADDRESS OF THE INSTITUTION *

Replace with text
Replace with text
Replace with text
Replace with text

39B STAMP AND/OR SIGNATURE

* Headings marked with an asterisk are mandatory.

[1] COURSE UNIT CODE: Refer to the ECTS information Package provided on the website of the host institution

[2] DURATION OF COURSE UNIT: Y = 1 full academic year | 1S = 1 semester | 2S = 2 semesters | 1T = 1 term/trimester | 2T = 2 terms/trimesters

[3] DESCRIPTION OF THE INSTITUTIONAL GRADING SYSTEM:

[4] ECTS CREDITS: 1 full academic year = 60 credits | 1 semester = 30 credits | 1 term/trimester = 20 credits

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