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IO 1 A Report
Part 2 – Existing Curricula
REPORT/ Mapping of existing syllabi

Erasmus+ UP4GREEN CONCRETE - UPskill Professionals FOR sustainable renovation plans of CONCRETE buildings Ref.: 2020-1FR01-KA202-079810	
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1. Agencies (ministries, experts, associations of trade representatives…) responsible for the school curricula at EQF4&5 levels for professions related to the building trade

ESTONIA

Formal vocational training curricula are divided between national and school curricula.

National curricula form the blueprints for providing upper secondary vocational training. National curricula is implemented by regulations signed by the Minister of Education and Research. National curricula is drafted in co-operation with social partners and by making allowances for pertinent professional standards, vocational education standards and the national curriculum for upper secondary schools.

School curricula are compiled for every individual vocation or profession that can be acquired at the school. The schools' formal study curricula (excluding vocational secondary education curricula) are compiled based on vocational education standards and associated vocational standards. In cases where no vocational standards exist, the schools must apply for recognition of the curricula by social partners. Vocational secondary education curricula will be formulated based on national curricula.

Vocational training curricula determine the following:

- the goals and tasks of vocational, specialised and occupational studies;
- attainable learning outcomes;
- links to the Estonian Qualifications Framework;
- requirements for commencing and concluding studies;
- curricular modules and their volumes together with learning outcomes and evaluation criteria;
- options and conditions for choosing modules;
- specialisation opportunities;
- specific qualifications acquired during studies.

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FRANCE

In France, the curricula of vocational diplomas are defined and certified by the Ministry of Education. They are defined in cooperation with professionals committees.

There are some other professional certifications depending on the Ministry of Labour.

GREECE

In Greece, National Agency for Certification of Qualifications and Vocational Guidance (ΕΟΠΠΕΠ) operating under the supervision of the Greek Ministry of Education, is responsible for the curricula. EOPPEP responds to the pressing need of creating and maintaining a holistic and interrelated policy framework for the development of lifelong learning and certification of qualifications in Greece, linking with the open market and responding to the needs of the citizens, a central issue in EU policy.

Since 2015 EOPPEP develops and implements comprehensive national systems for the accreditation of non-formal & informal learning and provides scientific and technical support in designing and implementing the vocational guidance national policy, as well as the provision of such services in Greece.

EOPPEP accredits occupational profiles with the active contribution of the social partners in the process of their development. An occupational profile is defined as the job functions and the required knowledge, skills and competencies for exercising an occupation or speciality.

The Greek Ministry of Education is responsible in defining the secondary education system. Specifically General Secretary of Lifelong Learning (Γ.Γ.Δ.Β.Μ) alone with National Skills Qualification Agency (Ε.Ο.Π.Ε.Π) is responsible for the requirements and technical education sector. Vocational Training Institutes-I.E.K (either private or public) are EQF 5 and require 4 semesters plus 1 additional semester of work base learning. IEK graduates will have to get the qualification Certificate (Β.Ε.Π) to complete job requirements.

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ITALY

The Ministry of Education (MI) is responsible for the secondary education system and for the higher technical education sector ITS (EQF5).

In this context, among others, the main functions of the Ministry of Education are:

- general objectives of the educational process, definition of learning objectives for the different levels and types of education;
- curricula, compulsory subjects and annual teaching timetable;
- general management, planning and evaluation in the field of higher technical education.

The 20 regions have an exclusive legislative power over the vocational education and training system (VET EQF3).

The regional competence includes higher technical and vocational education and training (EQF4-EQF5), further education and requalification, continuous training, etc. They cover all training activities leading to a qualification, a higher qualification diploma or a training credit but do not lead to a degree.

POLAND

In Poland, it is the Ministry of Education and Science that establishes curricula for all sectors and trades. The Ministry of Development, Labour and Technology (The Construction, Planning and Spatial Development and Housing Division1) is playing advisory role for the Ministry of Education and Science while developing curricula related to the building sector.

The Ministry of Education and Science was established on 1 January 2021 by the Regulation of the Council of Ministers of 22 December 2020 on the establishment of the Ministry of Education and Science and the abolition of the Ministry of National Education and the Ministry of Science and Higher Education (Journal of Laws of 2020, item 2334).

[1] The Construction, Planning and Spatial Development and Housing Division covers matters of: architecture, construction, architectural and construction supervision, planning and spatial development, geodesy and cartography, revitalisation, housing support, real estate management, including real estate of the State Treasury, municipal infrastructure, with the exception of defining the principles and conditions of collective supply of water intended for human consumption and collective sewage disposal, family allotment gardens, spatial information infrastructure

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2. Identification of topics covering energy efficiency, health and comfort of the users within existing curricula/ units/ modules relating to the renovation of concrete building.

All fully-fledged members of the European Union are obliged to develop and introduce the same Sectoral Qualifications Framework for the European Construction Industry (SQF-Con) therefore profession profiles in the sector are standardised. Even though it was challenging to identify particular courses relating deliberately to the renovation of concrete buildings within national curricula in most of the countries taking part in the desk research, it is worth underlying that topics related to energy efficiency or heath and comfort of the users are being covered automatically as a consequence of following the respective Constructing Law within qualification frameworks complying with European requirements and legislation regarding the total energy performance of buildings.

ESTONIA

Reference to the qualification/ jobs **Real estate manager**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum All curriculum is in accordance in a general and current Construction Act that keeps in mind the sustainable construction and renovation over all. Following the law and knowing legislation helps the students know how specifically work on concrete buildings to attain a the general sustainability of the building.
Title of the Unit /module (*if relevant*) Basic knowledge of buildings by the real estate manager Maintenance and upkeep of the real estate object
EQF-Level: EQF 5
Delivery of diploma (on-going assessment, final exam) Final exam, professional certification

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Topics/ Learning outcomes

On the completion of the course, the learner:

- has an overview of the load-bearing and covering structures, opening fillings and boundaries of buildings, and the construction materials used in their construction and installation
- knows the structure and operating principles of the technical systems necessary for the operation and use of the building in ensuring the indoor climate and operational safety of the building
- understands the requirements established by legislation for the construction, use, maintenance and reconstruction of buildings and related technical systems to the extent necessary for future work
- understands the possibilities of sustainable use of energy and other resources in the use and maintenance of the building, the land unit belonging to it and the facilities located therein
- understands the principles of ensuring the safety of use of the object, consumption and maintenance services and the (quality) requirements established by legislation
- assesses the condition of the load-bearing and covering structures of the building (incl. opening fillings) and determines the need for maintenance work (incl. repair work), taking into account the requirements established for the operational safety of the object
- analyses the prices of services and products and prepares an estimate of maintenance activities (for the preparation of procurement documents) and a schedule taking into account the specifics of the object and the customer's needs
- analyses the proper performance and cost-effectiveness of the technical systems of the building and determines the need for maintenance work (incl. repair work), taking into account the requirements established for the indoor climate, comfort, safety and security of the building

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FRANCE

Energy and environment challenges are part of the training and taken into account in all the professional activities. All professionals are to obtain the expected performance in respect to the environment, the reduction of energy needs and sustainable development. The building sector has to contribute to the achievement of the objectives set under the French Building Plan “Grenelle de l'Environnement".

Examples of qualifications are listed below:

Building technician for structural works (EQF level 4)

Building Maintenance Technician (EQF level 3)

Builder (EQF level 3)/ Module title: Building reinforced concrete structures

Drywaller-plasterer (EQF level 3)/ Module title: Insulation

Aluminium-glass carpenter (EQF level 3)

Carpenter installer (EQF level 3)

Façade painter (EQF level 3)

Sanitary installer (EQF level 4)

Thermal installation technician (EQF level 3)

NVQ MAINTENANCE OF COMMUNITIES’BUILDING (EQF level 3)

Technician in Economic Management of the Building (EQF level 5)

Reference to the qualification/ jobs **BTEC HND Building**
EQF-**Level 5**
Delivery of diploma (on-going assessment, final exam)
Topics/learning outcomes: On the completion of this course, the learner: -can suggest the design of technical solutions for the construction and the renovation of a concrete building taking into account all aspects of the building : structural (frames and facades made in situ, Walls, sails, posts, floors, beams, prefabricated frames and facades) and secondary works roofing, waterproofing, siding, exterior joinery, ducts and conduits, fittings, finishes). -validates and optimizes technically and economically the "work-process-materials" relationship, particularly in the case of interfaces between structural and secondary and technical trades; - analyses risks and proposes solutions; he can perform tests and interpret results .

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Reference to the qualification/ jobs **BTEC HND Economic Management of a Building**
EQF-Level 5
Delivery of diploma (on-going assessment, final exam)
Topics/learning outcomes: On the completion of the course, the leaner: -can intervene in all the stages of the construction of a building, from the idea to the finalization of the building. They intervene on the choices and the characteristics of materials and equipment to guarantee the conformity of the project in terms of regulations, satisfy the need expressed by the customer and respect the budget of the project of construction. - conducts needs analysis, risks analysis (health and safety) -conducts diagnosis for the renovation of existing building with regard to performance objectives. - provides advice on the comfort of the building: the quality of indoor environments (Acoustics, Thermal, Luminous, Indoor air quality) but also on the structure of the building: the building envelope, the interior design of the building, technical equipment. - is able to provide advice on sustainable development and environment impact : energy consumption of the buildings, energy efficiency, the sanitary quality of the premises, life cycle assessment, carbon footprint.

Reference to the qualification/ jobs **BUILDING Technician/ BUILDING TECHNICIAN FOR STRUCTURAL WORKS**
EQF-Level 4
Delivery of diploma (on-going assessment, final exam) Final exam
Topics/learning outcomes: On the completion of this course, the learner: -carries out structural works on construction, renovation or rehabilitation sites (individual houses, various buildings, engineering structures, general masonry work, manufacture of concrete elements for construction) while taking into account the quality and environmental standards in force. -has knowledge in order to implement solutions taking into account living comfort of the dweller (living comfort, personal comfort, thermal comfort, acoustic comfort, comfort related to water and air tightness, lighting comfort and comfort related to air renewal). - can conduct mechanical studies and make technical choices. - is aware of the way reinforced concrete behaves and of its potential pathologies. - carries out masonry works and build reinforced concrete structures.

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GREECE

Reference to the qualification/ jobs **Aluminium & Steel construction Technician**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum -
Title of the Unit /module (*if relevant*) Construction/ installation of aluminium systems
EQF-Level EQF 5
Delivery of diploma (on-going assessment, final exam) National Exams for accreditation
Topics Building and architectural plans: ▪ use of drawing instruments to draw lines and letters in building and architectural plans. ▪ facades, floor plans and sections with any scale and marking of the relevant dimensions Types of aluminium in the construction sector: ▪ use lists of profile systems to select the appropriate one ▪ system, series and profile for construction applications ▪ aluminium and in particular: the frames (doors, windows, entrance doors). Use of new technologies in special construction applications such as near the sea and in traditional buildings. Certification of the suitability of the raw material by recognizing and using the necessary equipment Use and maintenance in construction machinery and tools Aluminium products, glass processing.

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Reference to the qualification/ jobs **Ventilation and air conditioning installation technician**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum -
Title of the Unit /module (*if relevant*) Installation/ maintenance and upgrades of household air systems
EQF-Level: EQF 5
Delivery of diploma (on-going assessment, final exam) National Exams for accreditation
Topics Assembly, installation, connection, repair, replacement, testing, maintenance. Operation supervision and inspection of refrigeration and air conditioning equipment. Domestic, professional, building and industrial sector and in the transport sector.

Reference to the qualification/ jobs **Interior Electrical Installation Technician**
Title of the Unit /module (*if relevant*) Technical skills for Certified Electrical installation & networks
EQF-Level: EQF 5
Delivery of diploma (on-going assessment, final exam) National Exams for accreditation
Topics/ Learning outcomes Works related to construction, repair or maintenance of internal electrical installations of strong and weak currents. He/ she is able to perform tasks such as: installation of electrical supplies of various types, connection or disconnecting devices, inspecting electrical installations, using various instruments and tools.

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ITALY

Reference to the qualification/ jobs **Carpenter**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum Structural work in reinforced concrete built following the specifications of the technical project
Title of the Unit /module (*if relevant*) Structural carpentry work
EQF-Level: 4
Delivery of diploma (on-going assessment, final exam): Vocational Qualification
Topics Main techniques for carrying out works of structural carpentry: manufacture of iron reinforcements, formwork assembly, concrete laying, roof and ceiling support systems, etc.
CERTIFICATION Knowledge The construction process of a construction work: phases, processes, roles and tools Principles of technical drawing (architectural, structural, plant engineering) and calculation of slopes, heights, volumes and heights. Main techniques for carrying out structural carpentry work: making iron reinforcements, assembling formwork, laying concrete, load-bearing roof and ceiling frames, etc. Describe the skills part of the work. The ability to apply knowledge and use know-how to complete tasks and solve problems Adopt, according to design standards, technical solutions for the erection of formwork and prefabricated structures Apply cutting, bending, welding and laying techniques for steel and/or iron reinforcements. Understand how and when to cast the concrete and dismantle the works Interpret technical drawings in order to identify the construction system, shape, dimensions and measurements of the construction work to be carried out. Describe social and professional competencies. The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work in study situations and in professional and personal development Construction of a reinforced concrete structural work according to the specifications of the technical project.

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Reference to the qualification/ jobs **Technician in energy solutions for the building – plant system**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum State of the building-plant system defined in all its components (energy needs, energy performance, criticalities, inefficiencies, etc.). Conformation of energy performance improvement measures
Title of the Unit /module (*if relevant*) Representation of the energy situation of the building system Type of intervention in terms of technical and economic feasibility
EQF-Level 6
Delivery of diploma (on-going assessment, final exam) Professional Qualification
Topics Main passive technical construction solutions Main building and civil engineering technologies (air conditioning, plumbing, lighting)
CERTIFICATION Knowledge Energy performance indicators of a building Main instrumental analysis tools and techniques (thermography, blower check, thermal transmittance, etc.). Main measurement techniques (e.g. thermo-hygrometric, acoustic, environmental) Cost/benefit analysis methods Main legislative and regulatory references regarding the building-plant system Main passive technical-constructive solutions Main building and civil engineering technologies (air conditioning, plumbing, lighting) Describe the skills part of the work. The ability to apply knowledge and use know-how to complete tasks and solve problems Recognise the technological and environmental components of the building envelope and existing installations that have an impact on the performance and efficiency of the building and installation system Understand the essential elements of the energy improvement interventions to be carried out: type of intervention, characteristics, purpose, behaviour over time and maintenance/management Identify the main technologies/energy systems currently available on the renewable and assimilated energy market, with particular regard to the innovative solutions promoted by current legislation Design the most suitable energy systems for the interventions to be carried out, evaluating the functional and applicative characteristics of the different available technologies Evaluate the various opportunities for modification/integration of existing building envelope technologies and plant components Describe social and professional competencies. The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work in study situations and in professional and personal development Representation of the energy situation of the building-installation system Set up of technical solutions to improve energy performance

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Reference to the qualification/ jobs **Innovative building techniques -IFTS**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum Design measures to improve the energy performance of construction works
Title of the Unit /module (*if relevant*) Design construction, renovation and improvement of energy performance of buildings
EQF-Level: 4
Delivery of diploma (on-going assessment, final exam) CERTIFICATE OF HIGHER TECHNICAL SPECIALISATION
Topics ▪ Renewable and non-renewable energy sources: characteristics, use, impact; ▪ Building and civil engineering technologies (air conditioning, plumbing, lighting); ▪ Legislative and regulatory references regarding the building and plant system; ▪ Products and materials for eco-sustainable building; ▪ Elements of domotics; ▪ Techniques for the economic evaluation of investments
CERTIFICATION Knowledge ▪ Renewable and non-renewable energy sources: characteristics, use, impact; ▪ Building and civil engineering technologies (air conditioning, plumbing, lighting); ▪ Legislative and regulatory references regarding the building and plant system; ▪ Products and materials for eco-sustainable building; ▪ Elements of domotics; ▪ Techniques for the economic evaluation of investments. Describe the skills part of the work. The ability to apply knowledge and use know-how to complete tasks and solve problems ▪ Apply techniques of energy diagnosis of existing buildings; ▪ Identify the essential elements of the energy improvement measures to be carried out: type of intervention, characteristics, purpose; ▪ Identifying the most suitable energy systems for the interventions to be carried out; ▪ Evaluating the functional, applicative and economic characteristics of the different technologies available, with respect to the specifications of the technical project. Describe social and professional competencies. The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work in study situations and in professional and personal development Design measures to improve the energy performance of building works

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Reference to the qualification/ jobs **Higher technician for energy saving in sustainable construction - ITS**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum Choose and apply innovative technologies in the field of energy, plant engineering and materials used Apply safety, quality and environmental regulations
Title of the Unit /module (*if relevant*)
EQF-Level 5
Delivery of diploma (on-going assessment, final exam) HIGHER TECHNICAL DIPLOMA - EXAM
Topics Tools and techniques for organising and managing building renovation projects Eco-sustainable new buildings and solutions for the energy efficiency of existing buildings
CERTIFICATION Knowledge Typological and technological analysis of the built environment Analysis of the built environment in relation to deterioration Energy efficiency in existing and new buildings Describe the skills part of the work. The ability to apply knowledge and use know-how to complete tasks and solve problems Use tools and techniques to support energy-environmental diagnosis and monitoring of buildings; Identify possible solutions for energy saving, in terms of insulation materials and innovative technologies Encourage the integration of specialised components, functions and skills and the maximum integrated use of renewable energy sources, possibly available on site, in energy efficiency projects Describe social and professional competencies. The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work in study situations and in professional and personal development Management of activities related to: energy saving and energy assessment, high-efficiency building envelopes, heating systems powered by alternative energies, acoustics, home automation, environmental impact assessment

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POLAND

The Ordinance of the Minister of National Education of 15 February 2019 on the general aims and objectives of education in occupations of vocational education and the classification of occupations of vocational education is effective from 1 September 2019. The new structure of the classification of occupations of vocational education takes into account the assignment of individual occupations to one of 32 branches, taking into account the specificity of vocational skills or the extent to which these skills are used in the performance of vocational tasks.

Among 32 branches there is construction industry (BUD). Occupations and professional qualifications in construction industry (BUD), formula 2019:

Construction Technician,

Technician Geodesist Sanitary Engineering Technician,

Building Interior Works Technician,

Building Construction Fitter,

Building Insulation Technician,

Sanitary Systems and Installations Fitter,

Carpentry and Joinery Assembler,

Building Completion and Finishing Works Assistant,

Masonry and Plastering Worker,

Concrete and Reinforcement Worker,

Carpenter,

Roofer,

Stonemason,

Stove Fitter.

Introducing new construction professions to the education system and changing the already existing ones is to respond to the labour market demand for comprehensively educated graduates of construction schools, as future employees with relevant (up-to-date to the requirements of the construction market) knowledge and skills necessary to meet the requirements of the modern construction market in the segment.

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Reference to the qualification/ jobs **7 SRK-BUD**
Type of recommendations Module/learning outcome in NATIONAL/REGIONAL curriculum e.g. Technical University of Lodz Studying urban revitalisation is a unique educational proposal, created in response to current trends in the development of urban centres.
Title of the Unit /module (*if relevant*) **Urban Revitalisation**
EQF-Level EQF 7 and higher
Delivery of diploma (on-going assessment, final exam) Master's Degree/ Postgraduate Certificate/ Postgraduate Diploma
Topics Giving a new direction to post-industrial spaces and setting a new course for cities with an industrial past, revitalising city centres, building social ties in blocks of flats deprived of community life - these are just some of the challenges which urban regeneration graduates will face in their future careers.

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