D.6.3. Layman's report – Final publishable report

Strengthening competences to enhance energy renovation and fulfil 2030 goals

BUILD UP Skills

- Croatia -

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Project details

LIFE21-CET-BUILDSKILLS	Project title:	CRO skills – rebooting the National Platform and Roadmap
	Short title:	CRO skills RELOAD
	Project start date:	01/11/2022
	Project end date:	30/04/2024
	Total budget:	370 027.40 €
	EU contribution (95%):	351 524.40 €
	Project website:	https://croskills-reload.grad.hr/
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Project partners

Co-financed by the European Union

However, the views and opinions expressed are those of the author(s) alone and do not necessarily reflect the views of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

DOI: https://doi.org/10.5592/RP/MR.2024.02

ISBN: 978-953-8168-68-0

Further information

You can find more details about the implementation of BUILD UP Skills in Croatia at https://croskills-reload.grad.hr/hr/home-hr/

You can find more details about the BUILD UP Skills initiative at www.build-up.ec.europa.eu

You can find more details about the LIFE program at https://cinea.ec.europa.eu/programmes/life_en

Introduction

Energy-efficient renovation and low-energy building construction represent significant challenges for construction and related industries.

In Croatia, energy inefficient buildings are accountable for **47.2% of final energy consumption and 36% of CO_2 emissions**. **41% of total number of buildings belong to the category of buildings with the worst energy performance based on consumption of heating energy, with a defeating 0.7% renovation on an annual basis for the period from 2014 to 2020**. Without deviation, it is a direct indication for the urgent need to increase the level of energy renovation of the total building stock.

The Croatian government has taken certain steps to promote energy efficiency in the building sector, including the creation of the *National Strategy for Sustainable Development until 2030* and the establishment of the Environmental Protection and Energy Efficiency Fund.

In order to achieve the goals of the EU directives on energy efficiency the construction sector must increase the number of skilled workers, including craftsmen and entrepreneurs with special knowledge and expertise in using new technologies and ensuring high-quality construction.

Five national partner organizations of the CRO skills RELOAD with particular expertise in the sphere of education and sustainability decided to tackle the need of strengthening competences to enhance energy renovation of buildings in order to fulfill appointed goals for 2030.

Goals:

The construction sector plays a key role in achieving the EU's energy efficiency goals and reducing greenhouse gas emissions. To succeed in hese goals, it is necessary to engage qualified workforce, proficient for implementing new technologies and construction practices. The goal of the project is the **re-establishment of the ˝National Qualification Platform˝** and **update and upgrade the ˝National Roadmap˝** to achieve national energy and climate goals. The project acts on all segments of the renovation process ecosystem, from decision makers to future specialists – students with intention to adopt sustainable construction as the key levers for achieving decarbonization goals with a special emphasis on the importance of education and lifelong learning.

The project is building up and upscaling results of previous BuildUp skills projects supporting new skills development, namely CROSKILLS 1 (2012-2014) and CROSKILLS 2 (2014-2017)

Why CRO skills RELOAD?

The project provides an alignment in existing and new education programmes for vocational education and training with current needs in the construction sector in Croatia for blue- and white-collar professionals and moreover to increase the number of skilled workforce across Europe who are qualified to perform retrofits in buildings. Existing qualification schemes and implementation of education programmes according to the National Roadmap developed in Croskills Pillar I (year 2013) and aligned with the Croatian Qualification Framework are being revived and brought to a higher level due to the need to accelerate the achievement of the 2030 energy targets. Croatia must increase the speed of renovating its existing stock to at least 3% renovation rate per year. Unfortunately, the current renovation rate is around 0.7% which is insufficient to achieve goals by 2030 and 2050. One of the most important obstacles hindering this improvement is the lack of skilled workforce. Croatia simply does not have enough (qualified) workers.

By analyzing the current situation in the building sector regarding national plans and documents, key data on the building stock, energy, curricula and identification of barriers, together with updating the National Roadmap and revitalization of the National Qualification Platform, the CRO skills RELOAD project lies at the core of delivering sustainability.

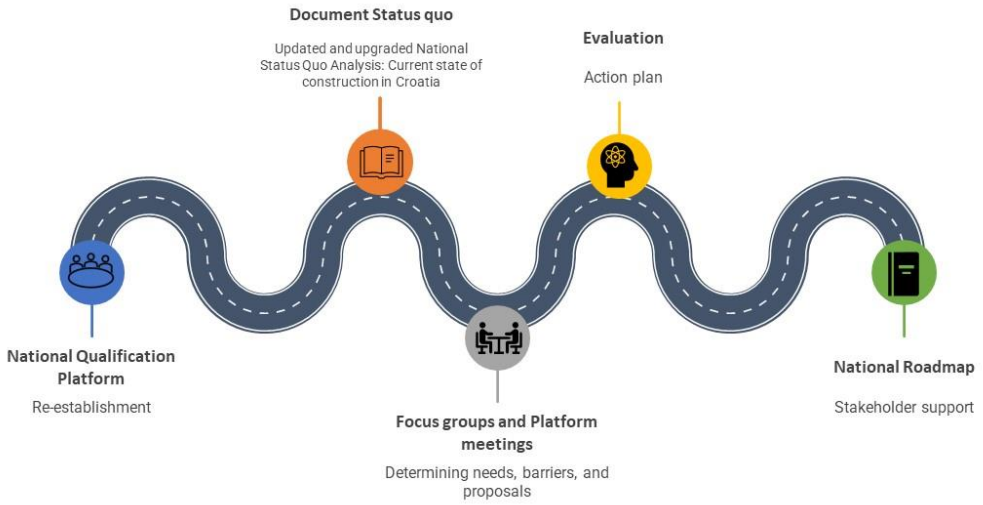

Figure 1. Activities throughout the project and the path to developing the final output.

Identifying key aspects of the construction sector and areas for continued development

To define and quantify the needs of skilled workforce in Croatia in terms of contribution to the goals of EE and RES, the project activities provided a document to comprehend the running and overall reoccurring obstacles in terms of ensuring quality workforce in the field of energy efficiency.

The underlying work behind creating content for the document included an analysis of 40 different documents and data sources, along with a survey covering a total of 78 secondary schools in order to identify the existing education system. For higher education, a multi-step approach was needed due to the inconsistency of official registers containing relevant data. The compiled information was crucial for understanding the level of education and training for students and the extent to which energy efficiency and renewable energy sources are integrated into curricula.

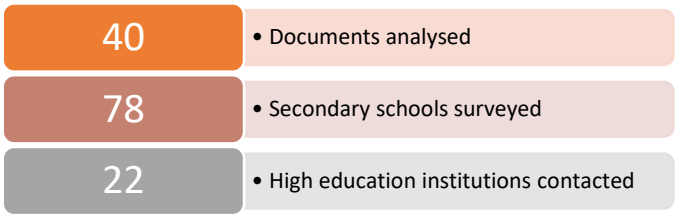

Figure 2. Methodology to create content

Moreover, a questionnaire was conducted with a purpose to determine the structure of trades that perform construction work today as well as the level of knowledge and motivation of tradesmen and their employees on energy efficiency and new technologies and trends in construction.

In order to obtain constant insights into needs and gaps of the construction sector, project partners conducted **several National Qualification Platform (NQP) meetings including relevant stakeholders from the industry, energy and educational sector as well as investors and media representatives.**

The NQP meetings resulted in devoted involvement and support from relevant public institutions, associations and manufacturers that provided significant feedback on the needed guidelines to be defined as well as final support by endorsing proposed measures via the National Roadmap. Aside from the platform, the project used various communication channels to gain key insights such as focus group meetings and other meetings with the experts.

Figure 3. Communication channels used to create the National Roadmap.

Skills gaps between the current situation and the needs for 2030

In order to identify the needs to proceed with the energy goals for 2030 project partners gathered all relevant data in the upgraded and updated **National Status Quo** report. To meet the energy efficiency targets for buildings by 2030, **it's estimated that around 22,000 VET workers will be required annually**. Of these, roughly 9,400 will engage in renovating and constructing building envelopes, while 6,000 will concentrate on insulating roofs and fitting windows and doors. The remaining 6,600 workers will be assigned to various related duties. Moreover, Table 3 shows the estimated number of workers required to meet RES goals by 2030.

RES technology	Installed power until 2022 MW)	Expected installed capacity in 2030 (MW)	Energy production capacity in 2022 (GWh)	Expected energy production capacity in 2030 (GWh)	Average energy production (MWh per installed MW)	Average working life of equipment (years)	Average annual employment, workforce GWh	Required number of workers for RES per year
Solar thermal systems for heating	209,15	317,01	259,35	393,09	1240	25	0,23	150
Biomass boilers and furnaces for heating all types of buildings	7242,26	7591,81	13036,07	13665,25	1500	30	0,21	600
Shallow and deep heat pumps for heating and cooling	27,96	70,08	174,45	437,29	5000	25	0,25	250
Above-ground heat pumps for heating and cooling	103,81	179,85	647,79	1122,3	5000	25	0,25	430
Integrated photovoltaic power plants in buildings (electricity)	133,37	440,42	153,38	506,49	1150	25	0,87	1100

Table 2. Estimated number of RES workers (EQF level 4 and 5).

Furthermore, **a total of 2,500 engineers are needed for the design phase**, averaging around 625 engineers per profession. For the renovation and construction phase, 3,300 construction engineers are required, which amounts to 825 engineers per profession.

	Type of works	Estimated workforce needed	European qualification framework level
VET workers (blue collar workers)	Wall insulation	9.400	Level 4. and 5.
	Roof insulation/ replacement	6.000	
	Carpentry replacement	6.600	
	Solar thermal systems for heating	150	
	Biomass boilers and furnaces for heating all types of buildings	600	
	Shallow and deep heat pumps for heating and cooling	250	
	Above-ground heat pumps for heating and cooling	430	
	Integrated photovoltaic power plants in buildings (electricity)	1100	
	VET total	**24.530**	
Engineers (white collar workers)	Engineers for renovation/ construction (design process)	2.500	Level 6. and 7.
	Engineers for renovation/ construction (construction process)	3.300	
	High institution total	5.800	
	TOTAL	30.330	

Table 3. Estimated workforce needed until 2030.

The total number of workforce needed per European qualification framework is more than 30, 000 including both blue and white collar professionals.

In terms of qualification needs, for quality construction and renovation, a workforce with knowledge of energy-efficient technologies, renewable sources, and green skills is essential, it is estimated that between 500 and 1200 workers need to be trained annually to acquire the necessary skills and knowledge. Additionally, 500 for RES and over 1000 engineers. Qualification needs per year for each type of works regarding EQF levels is shown in Table 4.

	Type of works	Estimation	Qualification needs per year	European qualification framework level
VET workers (blue collar workers)	Wall insulation	3.760	Min 500 Max 1200	Level 4. and 5.
	Roof insulation / replacement	3.420		
	Carpentry replacement	2.470		
	RES	2.530	500	
Engineers (white collar workers)	Civil Engineering	1.450	435	Level 6. and 7.
	Architecture	1.450	290	
	Mechanical Engineering	1.450	145	
	Electrical Engineering	1.450	145	

Table 4. Qualification needs per year.

One of the key issues is unskilled foreign workforce, but the national context has underlying issues in terms of acquainting knowledge and skills.

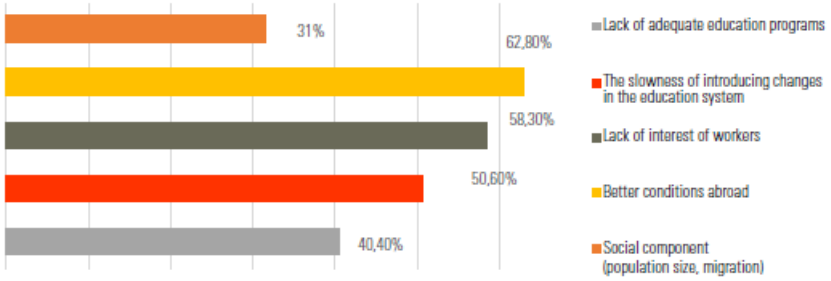

Figure 6. Reasons for the insufficient number of qualified workers.

Advocating efforts and changes on the national level

Following a thorough examination of the country's circumstances (*Analysis of the current state of construction in the Republic of Croatia and the skills of construction workers in the field of energy efficiency and renewable energy sources, July 2023*), guidelines were formulated for **the ongoing education of construction workers and engineers** specializing in energy efficiency, comprehended within the National Roadmap. These guidelines consider the **anticipated role of the construction industry in meeting national targets by 2030** and the criteria for zero-emission structures (ZEB) by strategically coordinating the development of educational programs and training for construction workers in energy efficiency and renewable energy. Additionally, they involve evaluating the labor market to **enhance the long-term energy efficiency of buildings in the Republic of Croatia**.

The Roadmap focuses on three tiers of educating for both current and prospective individuals entering the construction sector – encompassing **vocational training, higher education, and lifelong learning initiatives**, including training and retraining schemes tailored for employed and job-seeking individuals aiming for requisite professions.

The guidelines encompass the following elements:

• Examination of trends and forecasting future demands for skilled labor, aligning with the European Union's 2030 objectives: enhancing energy efficiency through building renovations and increasing the utilization of renewable energy sources within the construction sector.

• Assessment of skill requirements and gaps within the construction industry, including a quantitative analysis of the workforce necessitating training across various qualification levels (technical workers, engineers).

• Prioritization of actions based on sector-specific needs (introducing new qualification frameworks and/or updating existing ones) pertinent to diverse professions to attain the established objectives.

• Formulation of an action plan detailing the identified measures until 2030, including steps for implementation, allocation of additional resources, responsible stakeholders, funding sources, and requisite supporting measures.

• Oversight of the progress of proposed initiatives to ensure effective implementation and attainment of the outlined objectives.

Outlined in this manner, the Roadmap furnish a tangible guidelines and essential actions to address identified shortcomings across all tiers of professional accreditation, ultimately facilitating the realization of the 2030 objectives within the construction domain. Consequently, the National Roadmap have garnered acceptance from pertinent entities and stakeholders, accompanied by a commitment to their execution and enforcement.

European added value

Throughout the implementation of the CRO skills RELOAD project, significant engagement was demonstrated through **participation in numerous national and EU events**. These platforms served to underscore key themes such as the shortage of skilled workforce and facilitated the exchange of best practices and ideas among relevant stakeholders across Europe.

The CRO Skills RELOAD initiative was prominently featured in two Build Up Skills EU exchange meetings, including one conducted online (November 28-29, 2022) and another held in Brussels (October 26-27, 2023). These gatherings provided opportunities to showcase project activities and outcomes while fostering productive discussions with counterparts involved in similar initiatives throughout the EU.

Additionally, participation in multiple events marking the 2023 as The European Year of Skills conference and the 6th Central Conference on Sustainable Building further solidified the project's presence within the EU arena. Through active involvement in EU networking activities and the sharing of experiences, CRO skills RELOAD contributed significantly to the ongoing dialogue surrounding skill development and sustainability within the region.

Furthermore, the impact of CRO skills RELOAD **extended beyond participation in events, catalyzing the inception of multiple follow-up projects at the European level** aimed at addressing the persistent challenges associated with the shortage of skilled workforce. These collaborative endeavors exemplify the project's enduring legacy in shaping future initiatives aimed at tackling critical workforce issues across Europe**.**