



H2020-LC-SC3-EE-2019 HEAT PUMPS SKILLS FOR NZEB CONSTRUCTION (HP4ALL)

**Title Report: D3.2 - National and European
Union training frameworks analysis**

**Lead Contractor: European Heat Pump
Association (EHPA)**

Author(s): Dan Stefanica, Laura Henderson

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The task is part of Work Package 3, that has as main objectives:

- Firstly, to gather and analyse data coming directly from end users and training providers, coupled with Regional, National and European Union wide best training policy frameworks.
- Secondly, to find opportunities, barriers and gaps (e.g. quantitative, qualitative) in the current training offers and/or policy.
- To engage the relevant stakeholders (e.g. installers associations, installers, training providers) on how to upskill their services and build upon the existing resources available.

The ultimate aim is to develop a Competency Framework for the range of knowledge, skills and expertise required to ensure that the relevant HP technologies are installed to the highest quality as to make the maximum contribution towards the energy transition.

Specifically, Task 3.2 (National and European Union Prospective Training Frameworks Analysis (M1-M10) (EHPA, LIT, IERC, CTA, ESV, RINA-C)) aims to complete the analysis of the data collected from the training providers, as well as the work carried out in T2.1, a further detailed analysis of the upcoming European and National upskill policies, will be assessed as follows:

- EU regulations in this matter – planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level. This will be conducted by EHPA and RINA
- National and Regional prospective frameworks in IE, ES, AT to see an overview on the future regulations and the potential impact, comparing them with the strengths and weaknesses of the current market along with the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects. LIT, CTA and ESV will complete this review.
- Use of best practice examples that can be replicated in upskilling building professionals and/or blue-collar workers across the building design, operation and maintenance value chain. IERC will conduct this analysis



This analysis will draw on relevant education, training, energy policies and directives thus considering the potential for mutual recognition of skills and competencies, as well as potential challenges in meeting the supply of the upskilling provision.

Project details			
Project acronym	HP4ALL	Start / Duration	September 1, 2020
Contact persons	Seamus Hoyne (seamus.hoyne@lit.ie) Padraic O'Reilly (padraic.oreilly@lit.ie)		
Website	www.hp4all.eu		

Report Contributors				
	Name	Organisation	Role / Title	E-mail
Report leader	Dan Stefanica	EHPA	Head of Projects	dan.stefanica@ehpa.org
Contributing Author(s)	Laura Henderson	EHPA	Policy and Project Officer	laura.henderson@ehpa.org
Reviewer(s)	Padraic O'Reilly	LIT	Research Fellow	padraic.oreilly@lit.ie
Final review and quality approval	Padraic O'Reilly	LIT	Research Fellow	padraic.oreilly@lit.ie

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2 Executive summary

HP4All brings together leading experts across Europe to enable capacity and skills development within the Heat Pump sector and to ensure that the energy efficiency gains afforded by heat pumps are realised. HP4All, following a holistic, systemic point of view, will work both with the supply side (manufacturers, SMEs, installers etc.) and demand side (building owners, public sector etc.). This way, the project will enhance, develop, and promote the skills required for high quality, optimised Heat Pump (HP) installations within residential/non-residential buildings in Europe.

This document is the HP4ALL D3.2 - National and European Union Prospective Training Frameworks Analysis (contract no. 891775).

3 Acronyms and abbreviations

BIM	Building Informational Model
DCP	Dissemination and Communication Plan
DOA	Deed of Agreement
EC	European Commission
EE	Electrical Engineering
EEA	European Education Area
EU	European Union
GHG	Greenhouse Gases
GP	General Public
GRP	Gross Regional Product
HP	Heat Pump
HVAC	Heating, Ventilation and Cooling
NECP	National Energy and Climate Plans
OEM	Original Equipment Manufacturer
PM	Policy Makers
RES	Renewable Energy Sector
RGE	Recognised Guarantor of the Environment
SC	Scientific Community
SEAI	Sustainable Education Authority of Ireland

SI	Software industry
TM	Trade Media
VET	Vocational Education and Training
WP	Work Package

4 Introduction

This document is the HP4ALL National and European Union Prospective Training Frameworks Analysis (M1-M10) (EHPA, LIT, IERC, CTA, ESV, RINA-C) (contract no.891775) corresponding to D3.2 (M10) lead by EHPA. This document contains all relevant information regarding: EU regulations in this matter – planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level; National and Regional prospective frameworks in IE, ES, AT to see an overview on the future regulations and the potential impact, comparing them with the strengths and weaknesses of the current market along with the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects; Use of best practice examples that can be replicated in upskilling building professionals and/or blue collar workers across the building design, operation and maintenance value chain.

4.1. Background

Heat pump sales across Europe grew by 7.4% in 2020, and with approximately 244 million residential buildings in Europe, the heat pump market share of the building stock is around 6%.¹ This growth, coupled with global environmental and decarbonisation goals will lead to an increased need to improve the knowledge of those responsible for the installation and maintenance of heat pumps and all of the aspects involved in this. HP4ALL aims to increase the number of skilled workers in the heat pump industry, design heat pump competency and excellence skills frameworks, enable end-users/clients to demand high quality solutions, and to ultimately replicate the project at national and EU level.

4.2. Objectives

The main objectives of this WP are threefold and self-reinforcing,

- Firstly, to gather and analyse data coming directly from end users and training providers, coupled with Regional, National and European Union wide best training policy frameworks.
- Secondly, to find opportunities, barriers and gaps (e.g. quantitative, qualitative) in the current training offers and/or policy.

¹ European Heat Pump Association, (2021) 'European Heat Pump Statistics and Report 2021'.



- To engage the relevant stakeholders (e.g. installers associations, installers, training providers) on how to upskill their services and build upon the existing resources available.

The ultimate aim is to develop a Competency Framework for the range of knowledge, skills and expertise required to ensure that the relevant HP technologies are installed to the highest quality as to make the maximum contribution towards the energy transition.

4.3. Methodology

To complete the analysis of the data collected from the training providers, as well as the work carried out in T2.1, ([Link to D2.1. on Project Team channel](#)) a further detailed analysis of the upcoming European and National upskill policies, will be assessed as follows:

- EU regulations in this matter – planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level. This will be conducted by EHPA and RINA
- National and Regional prospective frameworks in IE, ES, AT to see an overview on the future regulations and the potential impact, comparing them with the strengths and weaknesses of the current market along with the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects. (LIT, CTA and ESV will complete this review)
- Use of best practice examples that can be replicated in upskilling building professionals and/or blue collar workers across the building design, operation and maintenance value chain. IERC will conduct this analysis

This analysis will draw on relevant education, training, energy policies and directives thus considering the potential for mutual recognition of skills and competencies, as well as potential challenges in meeting the supply of the upskilling provision. EHPA will compile this data into D3.2.

5 Upcoming European and National up-skill policies

5.1. EU introduction

When von der Leyen took to office in 2019, she made a promise to put a strong emphasis on combatting climate change through the Green Deal. This deal is intended to affect all areas of the European economy, with training and education being no exception. This subject is repeated in many different upcoming legislative files, whether these be focused particularly on the subject (such as the Just Transition Mechanism) or focused on a slightly broader subject (such as the Climate Law) though still emphasising the need for skills for the energy transition.

One of the main themes that can be taken from the analysis of ongoing EU education and training policies and legislation, is the emphasis on forward thinking and planning for the future



labour market. This emphasis is both important and necessary for both the economy and workers, due to the green transition ending more traditional forms of employment due to environmental concerns. As this transition is something we know is happening in the coming years, it makes sense that solutions are planned for, so that more jobs are created in the green economy to make up for losses. By creating solutions today for tomorrow's problems, we can avoid crises and ensure that all workers have the relevant skills and trainings to prepare for the green transition.

We would not be able to plan for the greening of upskilling and training without the adequate support in the form of funding. During this analysis it was obvious that this has been considered at length by the Commission, showing that they are taking the subject seriously. In particular this can be seen in the public sector loan facility under the Just Transition Mechanism, which supports areas which would not otherwise have access to loans with grant and loan facilities in order to up- and re-skill workers for the climate transition. This support through funding can also be seen in many of the other case studies, which is important if policies are to become a success.

The current focus on improving the skills, training and education of EU workers to ensure employment in green jobs following the climate transition is a very important, and it is one that should be continued in ongoing legislation in the years to come to ensure that both the economy and workers are supported through this period of change.

5.2. Trends EU

It can be surmised and is well known that the EU are ensuring that climate protection and reduction of greenhouse gases are their top priority when it comes to legislative measures. The same can also be said of the skills sector: there is certainly a trend towards ensuring that the workforce has the relevant skills to cope with the twin (green and digital) transitions. Upcoming EU support tends to lean towards forward planning, in order to ensure that there are no skills shortages in the future, as well as towards financial support. The Commission has funded several initiatives which would support skill building, which is very important if the vision of a future-proofed workforce is to be realized.

5.3. EU

As discussed above, the European Commission is particularly focused on the green recovery and so through the literature review, a number of upcoming European up-skill policies have been identified.

The European Green Deal set out the EU's climate ambition and outlines targets for climate neutrality, and the introduction of the Climate Law cements this ambition into legislation. As well as addressing the Union's emissions, the law also addresses the climate transition's impact on society, in particular 'vulnerable communities' and giving them the skills to adapt. The Commission have stated that there is a need to strengthen 'the efforts on climate-proofing, resilience building, prevention and preparedness is essential as well as ensuring a just transition'. It is clear that whilst all European citizens are targeted by the Climate Law, it particularly affects those sectors and workers affected by climate neutrality ambitions, such as those in fossil fuel industries. It provides stability, a long-term plan and a system for monitoring progress so that transition is fair, which amplifies training programs that promote renewable



technologies. HP4all can learn that from the EU, and plan for the long-term in order to strengthen the industry.

As with the Climate Law, the European Skills Agenda for sustainable competitiveness, social fairness and resilience provides future planning, setting out a five-year plan in order to develop more and better skills. It will strengthen competitiveness, social fairness and builds resilience in the face of future crisis. It is built around four building blocks and consists of 12 actions. Those with low qualifications and those who are seeking employment will benefit from the financial support and long-term planning provided by this strategy, as one of its aims is to help adults undertake training to increase their skills so that they are better able to cope with the green and digital transitions. This EU strategy not only focuses on vocational training, but supports all types of education, ensuring that support is given to those who need it.

The Public sector loan facility, is considered to be the third pillar of the Just Transition Mechanism, has been created in order to support areas which have been negatively affected by the climate transition, and supports public investment under through preferential lending conditions. There will be both a grant and loan facility, created with the intention to reduce the financial burden upon beneficiaries. Grants will not exceed 20% of the loan, and priority is given to projects which are directly related to the energy transition. This grant allows financial support to investments that otherwise would not raise enough revenue. The third pillar of the Just Transition Mechanism will complement the first and second pillars which focus on a wider range of investments by focusing on reskilling, job search assistance and the inclusion of workers into the job market. This regulation should increase the uptake in reskilling initiatives, as more financial assistance will be available and training programs will become more accessible. This example highlights the need for adequate funding if governments/authorities wish for success in reskilling for the green transition.

The Renovation Wave aims at boosting the renovation of buildings in the EU, as it is believed that this is crucial in achieving the goal of climate neutrality. The Commission's intention is to double the renovation rate in the next ten years. In order to achieve this, there will need to be an increase in the amount of construction workers who can carry out such services – it is estimated that the Renovation Wave will create an additional 160,000 additional green jobs in the construction industry. The EU institutions will now enter into discussions to plan further legislative and non-legislative measures to support this policy. The Renovation Wave particularly targets those in the EU building industry who either already have skills in building renovation, or who are well placed to develop them. It teaches us that not only do we have to focus on the upskilling and training of potential workers, but also concentrate on pull factors that will create an increased demand.

The European Skills Agenda for competitiveness, social fairness and resilience was identified due to the emphasis it put on creating a long-term plan for skills which is also backed by adequate funding (85 billion euros), both vital to strengthening skills for the long term. It will help individuals and businesses 'develop more and better skills' and calls for citizens to 'join forces in collective action', as one of the four building blocks which provide a basis for the twelve actions. It is hoped that this regulation will increase the number of adults who undertake training and increase their relevant skills, particularly in light of the twin transitions, and focusing on those who are seeking employment and those who could benefit from upskilling. The European Skills Agenda will improve the learning sector as a detailed plan to support all



types of education is vital to the industry - which is very important to ensure that we do not have skills shortages in the future.

The European Education Area (EEA) is like the European Skills Agenda in that it was created to support EU Member States in building 'resilient and forward-looking education and training plans'. The EEA ties in with the EU's Covid recovery plan Next Generation EU, as the Commission rightly believes that the way to lead the EU out of the current health crisis is through the digital and green transitions. Emphasis is placed on structural barriers to learning, skills and development, in order to prevent these having a negative effect on employment opportunities. Von der Layen has committed to making the EEA a reality by 2025 in her 'political guidelines for the next European Commission 2019 – 2024', with the first packages of measures being published in 2018 and 2019. The Commission Communication on the subject of the EEA covers six dimensions: quality, inclusion and gender equality, green and digital transitions, teachers and trainers, higher education and geopolitical dimensions. Creating a conducive environment and thinking outside the box in terms of developing skills is highly important to ensure that no one is left behind.

Another EU policy which has been created in response to real world events is the Brexit Adjustment Reserve. In response to the UK leaving the EU this reserve was created in order to support 'Member States, regions and sectors' which have been financially affected. One specific sector which is given support is the re-skilling and training of citizens returning from the UK to the EU as well as giving economic support to other sectors affected. Similar funds already exist, such as Invest EU which was created to mitigate the effects of the climate transition. The Brexit Adjustment Fund is an example of needing to be well prepared for world events which may affect employment, as long-term planning may not foresee the need for it, it could spontaneously occur.

The next ERASMUS+ programme (ERASMUS program for education, training, youth and sport 2021- 2027) aims to support learning mobility opportunities and cooperation between stakeholders. At an operational and a policy level, it aims to 'foster inclusion, excellence, creativity and innovation in education, training, youth and sport'. The programme will be accessible to a larger number of people than ever before, such as those in vocational training, non-formal learning and more. There will be a focus on people from all social backgrounds acquiring new skills in 'future orientated areas such as climate change and clean energy. This program reminds us of the importance of pan-European cooperation and inclusivity, which not only benefits citizens, but businesses who will have better access to a bigger talent pool.

The Proposal for a Council Recommendation on Vocational education and training (VET) for sustainable competitiveness, social fairness and resilience. This proposal, which has been adopted by the Council of the European Union defines the key principles that ensure vocational education and training is adapted to the changing needs of the labour market. The proposal places a strong focus on the increased flexibility of vocational education and training and reinforces opportunities for work-based learning and apprenticeships, as well as improved quality reassurance. The VET Council recommendation reminds us of the need for employees to be upskilled while they are in employment instead of waiting until they are unemployed, as well as ensuring that other work-based traineeships are of high quality.

5.4. National noteworthy – France

France is the leading country in EU for HPs installations. This is due to the low electricity prices, the legislation framework and the perceptions of the general public on this technology.

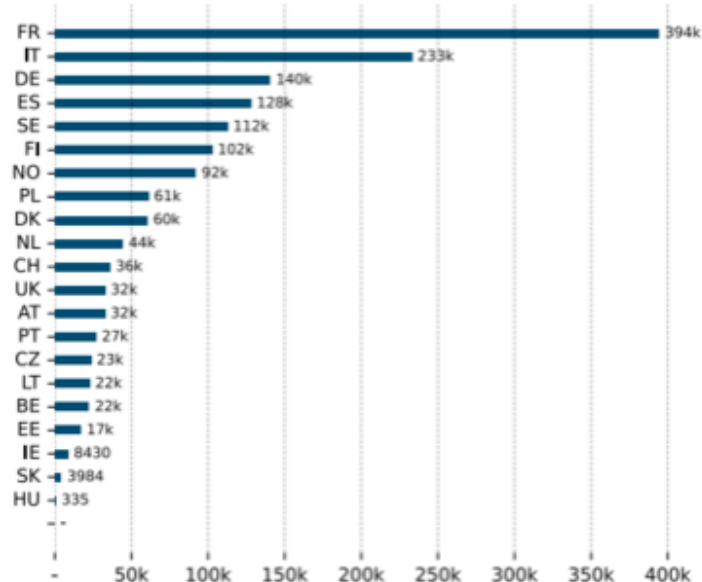


Figure 1. units sold by country in 2020, 21 European Countries¹

France is focusing on the renovation of its residential buildings and it is also gradually reinforcing its thermal regulations for new buildings.

Since September 2014, to facilitate the retrofitting of buildings and to improve their energy efficiency, a new quality mark has been applied (**RGE: synonym of recognized guarantor of the environment**) which represents the competent companies active in the renovation sector. The subsidies provided will be granted only if the retrofit is carried out by companies labelled RGE. This quality labelling guarantees a minimum of expertise to achieve an energy efficient retrofit.²

5.5. Example and what can we learn /what can be replicated from it? (France example)

The “RGE” quality label is a qualification scheme with a set of quality labels for professionals. This qualification is a voluntary process, but it enables the clients to benefit from financial support from the state. From September 1, 2014, the financial aid from the state (tax credits and eco-loan at zero rates) will be granted if the company performing the work is the holder of the reference RGE. It will also be required for operations that benefit from white certificates. Heat pumps installations are considered among the renovation and energy efficiency improvements actions foreseen from the financial aid and so, the technology installers can be included under the sign “RGE”.

² ENERGY EFFICIENCY IN FRANCE; Switzerland Global Enterprise, market study: <https://www.s-ge.com/sites/default/files/publication/free/market-study-france-energy-efficiency-sep-2014-s-ge.pdf>



The objective of this initiative is to encourage installers and operators to increase their competence and encourage installers and operators to facilitate the identification of professionals' ability in energy performance improvements. Several types of professionals are addressed, installers of renewable energy equipment, energy efficiency installers and consulting work related to energy efficiency. A strong demand is generated providing a real incentive for professional, especially those from small companies or who are self-employed and who may be harder to reach than those in a professional organization.

This principle is a guarantee for the customer to receive offers technically appropriate and of quality.

In addition, platforms for training professionals are organised at regional level, most often with the support of ADEME (Agence de la transition écologique - Ecological transition agency) and of the professional organisations. Information website managed by ADEME helps consumers choose the right professional for their renovation works since ADEME publishes national list of RGE professionals on their website. Today, approximately 18 000 enterprises under the sign RGE are distributed in France. On the website a directory including the contact details of all professionals and skilled artisans " RGE " is shown. It is a practical tool and easy to use for individuals, with entries by geographic area, by type of work, or even a reverse directory that allows to know in what area a company is competent.

Other tools to assist professionals are developed, such as publicly and freely available technical guidebooks emphasising quality issues, free training courses available online (e-learning), networks of actors created to promote experience sharing and the dissemination of information.

The initiative defines various points inherent to the activities envisaged by the project. One of the main criticalities relating to training activities is linked to the lack of interest of small installation companies in participating in training activities related to innovative technologies, preferring to focus on traditional technologies. Another important limitation is due to the general lack of visibility of the certified installers that have the skills suitable for proposing innovative tools. In France, regional tools have been developed to bring end users closer to the competent subjects, as well as various actions to disseminate this information and promote experience sharing.

Many European countries do not yet have such tools, while France represents a successful example.



6 National and Regional prospective frameworks

6.1 Trends

Following the in-depth literature review, trends can be identified in the national and regional prospective frameworks in the countries reviewed (Austria, Ireland and Spain).

All of the countries identified are taking steps to combat climate change, reduce greenhouse gas emissions and work towards the Green Deal. One of the key parts of this is ensuring that all workers are trained in order to facilitate this, such as learning how to install and maintain a heat pump. The increased uptake of these skills will ensure that there is enough supply of skill to keep up with an increased demand fuelled by an increased amount of green legislation. Another arm of this is the focus on increased renovation of existing buildings, which is seen as a vital part of combatting climate change. Again, there is a focus on the need to increase training in this area so that there is enough workers to facilitate renovations on such a scale.

Additionally, it can also be identified that there is a drive towards building skills through apprenticeships and other training programmes, with an increased focus on the quality of training and ensuring that all training is of a high standard. This is important as it ensures that all workers have a high standard of knowledge and are more than capable of ensuring high quality services. In addition there is a focus on long-term planning to ensure that we do not face a skills shortage in the future, as well as providing financial backing to ensure that it is future- proof.

In summary, the climate crisis has provoked measures which require training and upskilling in order to prevent a skills shortage in the future and to ensure that workers are prepared for the climate transition. There is a focus on ensuring that the trainings are high-quality and accessible, and this is often backed financially and with forward planning.

6.1.1 Austria

There are a number of legislative and policy frameworks in place or in development in Austria/Upper Austria aiming to improve energy efficiency (overall and specifically in the buildings sector). Achieving the goals that have been set will require having sufficient qualified professionals on the market, including along the HP value chain. A number of these legislations explicitly foresee training measures to help fulfil this need. Here is an overview of the relevant frameworks:

The Austrian Energy Efficiency Act (Bundes-Energieeffizienzgesetz – EEffG) is the Austrian legislation for the implementation of the EU Energy Efficiency Directive. It defines the 2020 goals for improving energy efficiency and sets the framework of measures for achieving these goals by 2020 (and for the years beyond). The Act defines quality standards for energy advisors and auditors – key actors in achieving energy efficiency goals. To be legally recognised as an energy advisor or auditor, professionals must fulfil minimum qualification requirements. This permits them to be included in the register of qualified energy service providers. Requirements include:



1. the successful completion of technical or economic training in the field of energy efficiency as well as at least one year of experience in this field, or
2. at least three years of professional experience in the field of energy efficiency during the last five years, in addition to acquiring the expertise required for the job via recognised energy-specific further education.

The Austrian Energy Efficiency Act foresees stronger rollout of eligible training measures to respond to the higher need for energy advisors and auditors in the coming years. This legislation is currently being updated (adoption foreseen in 2021). The new version will define Austria's goals for 2030. It is anticipated that the general structure and requirements for the training of energy advisers and auditors be maintained.

The Austrian government programme 2020-2024 includes a phase-out plan for fossil fuels in space heating and cooling as a crucial aspect for achieving Austria's climate protection targets (including climate neutrality by 2040). A federal law regulates the phase-out of oil and coal in the building sector in a step-by-step plan. In order to achieve decarbonisation goals, there is a need for more skilled professionals capable of installing high quality renewables systems (including heat pumps). This programme (like many of the others specified in this review) highlights that the government's decarbonisation targets are key drivers for the heat pump market and offer a large opportunity for the HP4ALL project.

The National Energy and Climate Plan (NECP), adopted in 2018, provides the framework for action in terms of Austrian climate and energy policy up to 2030. This project concerns the long-term transformation of the energy system in order to meet the future challenges in relation to climate protection and fulfil the commitments made under the Paris Agreement and at European level. Targets for 2030:

- 36% reduction of emissions compared to 2005 for non-ETS (Emission Trading Scheme) sectors;
- increase the share of renewable energy to 45-50%;
- 100% of the total electricity consumption being covered by renewables;
- 25-30% reduction of primary energy intensity compared to 2015.

To achieve these targets, a range of measures are foreseen. Implementation is in part already underway. To achieve goals in the buildings sector, the following measures specific to training are defined:

- including energy efficiency and climate protection in learning curricula and technical training programmes;
- improving training for professionals.

The Upper Austria Energy Strategy - Energieleitregion 2050 was adopted by the regional government in 2017, this strategy sets the energy policy goals of the region of Upper Austria in regard to renewables, efficiency and greenhouse gas reduction. The vision behind this strategy is to establish Upper Austria as an international leader energy region in respect of an



above-average improvement in energy efficiency, in the application of new technologies and as an international technology leader in selected core areas of energy and environmental technology.

Quantitative goals include a continuous improvement of energy-related greenhouse gas emissions, with

- a reduction in emission intensity (GHG to GRP_{real} [Gross Regional Product_{real}], based on 2014) of 25-33% by 2030 and 70-90% by 2050,
- a continuous increase in energy efficiency (final energy to BRP_{real}) with a reduction in energy intensity of 1.5-2% per year and
- an increase in the renewables share of electricity consumption to 80-97% by 2030.
- a continuous improvement of the heat intensity in the building sector by reducing the energy consumption per m² (climate-adjusted) by 1% per year

To achieve these goals, the strategy explicitly foresees communication and training measures including:

- information activities, end-user awareness raising, training and further education for a range of target groups
- training and further education offers

The Upper Austria Long-Term Renovation Strategy - in Austria, due to the country's federal structure, building legislation is regional matter. Each region must define the initiatives they will implement to reach the EU goal of climate neutrality by 2050. This includes the key aspect of training in the fields of buildings and energy efficiency. In Upper Austria, the training of relevant stakeholders through the ESV's Energy Academy, and the training of qualified energy advisors are defined as main elements of the Upper Austrian Long-Term Renovation Strategy. We can apply these learning points to HP4ALL as similar trainings and events will be an integrated part of HP4ALL activities for the pilot region of Upper Austria, and the curriculum is constantly updated to include the latest technical developments and market developments, which is of great benefit to both learners and employers.

6.1.2 Ireland

A number of future upskill policies have been identified in Ireland.

Ireland's future upskill policies will both directly and indirectly effect both the nZEB and green skills sector and thus impact the renewable heat generation and thus the HP deployment and training sector. Ireland's future upskill policies will be influenced by a large number of factors including:

- Current & future EU and national legislation
- Current & future EU and national policy / strategies / roadmaps
- Current & future EU and national funding
- National standards
- Educational institutes identifying training opportunities





- Commercial business identifying training opportunities
- Government consultation events into policy decisions

Like all EU countries, Ireland has a number of legislative & policy measures / funded projects etc that will impact the future of the training and skills sector, the table below shows a list of measures at their various stages of completion and if concrete measures are documented or just generalised statements or themes that may directly address HP training.

The 2021 Climate action plan is a result of the new Climate Action and Low Carbon Development (Amendment) Bill 2021, which is a legal framework outlining how Ireland will reduce its GHG emissions by 2050. This plan is in a consultation period and is expected that it will build on the 2019 Climate Action Plan which contained 183 actions broke down into 619 individual measures, eight of which relate to heat pumps in the areas of up-skilling and training, awareness campaigns, review of heat pump grant support, heat pump standards development, registration schemes for competent installers and advance the building regulations for new builds in relations to heat pumps. This initiative shows that policy can influence heat pump deployment and training, and that expert voices can input into policy.

The Action Plan for Apprenticeships is another policy identified in Ireland. It sets out a five-year strategy to deliver on the Government commitment of reaching 10,000 new apprenticeship registrations per year by 2025. It provides a roadmap to a single apprenticeship system and new support for employers and apprentices, which should provide a high quality and innovative approach, employer driven responses, apprenticeships for all (to match the profile of the general population), a valued option as we'll as a single coherent system. Of the 60 existing apprenticeship programs and 18 under development, a number link directly to heat pumps: plumbing, electrical, refrigeration, pipefitting and air-conditioning. It is very difficult to know what percentage of new apprenticeships will be created in these sectors, though it can be foreseen that the number of apprentices will grow. This provides a structure for developing new apprenticeships from an employer led perspective, which could allow for the development of one with a focus on heat pumps, for example a domestic retrofit apprenticeship.

As above, the Skillsnet Ireland, Climate ready initiative supports businesses in order to increase enterprise training, specifically with the 'climate ready' initiative, in order to equip them with the skills they need in order to respond to climate change. By the end of 2021, the Climate Ready initiative hope to have supported over 1000 businesses and 3000 employees, and gives an example of mentorship helping businesses respond to the climate crisis. Support will be given in the form of live and online workshops, masterclasses and mentoring, as well as through two programmes, the first of which is called the Sustainability pass, which is to develop awareness knowledge and skills in sustainability areas, and the second is the Energy Leader Programme, which is supported by SEAI and aims to assist businesses and energy providers with practical sessions on how to reduce energy waste, deliver cost savings and protect the environment.

Another government funded project which aims to build skills is the Digital Academy for Sustainable Built Environment (DASBE). This is an educational and training hub for the provision of upskilling, capacity building and education to the building sector on green construction, circular economy and digital skills, and was awarded funding from the Higher Education Authority in Ireland under the Human Capital Initiative pillar 3 scheme. It will provide



opportunities from apprenticeships to master degree level in the area of sustainable built environment, supporting the construction industry. Going forward, DASBE will create a digital platform to enable learners to gain micro-accreditations, special purpose awards, minor and major awards focusing on special topics, needs and requirements in the Sustainable Built Environment sector, as well as collaborating with 3 educational institutes. A strength of this programme is its ability to rapidly design, develop and deploy education and training programmes for construction workers that are flexible and responsive to the needs of the building sector.

The final government funded training program to be identified in Ireland by the literature review is the Waterford and Wexford Education and Training Board's (WWETB) Heat Pump Programme. The board are well placed to identify training gaps in the market as it provides training to apprentices working in the construction sector and has thus identified the need for a course in the area of heat pump maintenance and servicing, and so this is why the course is in development. The aim of the course is to increase the workforce so that they are able to respond to the increasing demand for the installation and maintenance of heat pumps in Ireland, and it is thought to be the first of its kind in the country.

6.1.3 Spain

The literature review identified the Spanish Long-Term Strategy for Deep Building Renovation as an example of a future national framework with relevance to skills building. This strategy includes a specific section (section 9) regarding professionalization, modernization, education and training in order to promote the emergence of a professional and modernized workforce that focuses on renovation. This can be seen as the first step in setting up qualitative targets regarding modernization in education and training, putting a initial emphasis on continuing and vocational training.

There has not been any data released yet on the increase of qualified workers or professional accreditations yet, as this is pending further specific provisions and regulations from the Ministries of Education and Labour. In Spain, up to 100% of the workforce is expected to require extra skills in EE and RES according to the European Construction. Sector Observatory. In 2018, changes to the public procurement system allowed public administrations to demand the use of BIM methodologies, skills and trainings in the delivery of projects and work contracts, and this led to the offer of BIM training courses significantly increasing in both universities and professional associations. In addition to this, the Spanish General Council for Vocational Training has created working groups to define recommendations for updating the VET system. There will be a focus on the improvement of quality of the Spanish VET system through the strengthening of dual VET and accreditation of professional competences acquired through work experience, such as apprenticeships.

This prospective framework highlights that more emphasis should be put on initial and continuing vocational training regarding construction, industrialization, digitalization and monitoring and maintenance of renewable energy installations, including the recognition or accreditation of worker's professional skills. It is also necessary to incorporate into the academic curricula the contents and skills necessary to perform as competent technicians to carry out for example Energy Certification. This comprehensive approach to the modernization



of the building sector includes education and training as part of its approach and could be replicated in other countries.

7 Best Practice examples

This section will discuss best practice examples in relation to the training and upskilling building professionals in Europe. First those examples that are available EU wide, multi-country or online (thus making them accessible to those in different member states and possibly beyond). Additionally, examples have also been identified in individual Member States, including: Austria, Denmark, Finland, Germany, Ireland and Spain.

7.1 Multi-country

The EUCERT training program is a unique example of best practices identified by the literature review, as it covers multiple countries – Austria, Belgium, Czech Republic, Denmark, Italy, Finland, France, Germany, Hungary, Poland, Portugal, Slovakia, Sweden and the UK. Funded by the European Heat Pump Association (EHPS), currently 15 countries are working together and participating in providing this training in accordance with Article 14 of the RES Directive. End-to-end aspects of the heat pump are covered, with a blend of theoretical and practical models. The main audience of this course are heat pump installers and technicians, and upon completion the trainee will receive a 'Certified Heat Pump Installer' certificate and will be listed in EHPA's database of certified heat pump installer. Identical training is provided in their local language, enabling comparative qualification and mutual acceptance of certification across participating companies. An advantage of this training program is that it is designed to be accepted in all European countries, so that installers are not restricted by borders. It is easily replicable – any country can register with EHPA and participate in training.

7.2 Austria

In Austria, the literature review identified that the Austrian Institute of Technology provide a training program called 'Planning, Installation and Maintenance of Heat Pumps'. It is open to those who are from a range of different backgrounds, such as installers and entrepreneurs, and aims to help attendees achieve excellence in heat pump installation, maintenance and in the heat pump sector in general, covering a range of heat pump technology, as well as planning and practical modules. The program is in-depth, and the trainees will receive the certificate of Certified Heat Pump Installer or Planner, and also become a 'Klimaaktiv competence partner'. It has been noted that this particular training program may not be suitable for replication in other Member States, as Austrian Heat Pump Technology is particularly complex and can differ in design from other countries.

7.3 Denmark

An example of a good practice identified in Denmark is that of a training course delivered in the form of a webinar by the Danish Institute of Technology which is named 'Heat pumps for increasing energy efficiency'. This course is available online, in Danish if all of the trainees are able to speak the language, and in English if not. The webinar lasts for 2 hours and provides an overview of heat pumps themselves and their possible incorporation into the heating and cooling industries, with a main focus of the integration of heat pumps into sustainable heating and cooling solutions. Although this is a very short course, it provides an concise information on the subject, covering the technology, its applications and economic aspects, but obviously



cannot give detailed and practical knowledge. This could be replicated in all HP4ALL pilot countries in order to encourage those who have already got a heat pump installer or plan to install one, to gain further knowledge.

7.4 Finland

In Finland, Danfoss, an engineering company, run heat pump training program to provide elementary knowledge and insights into the installation and operation of heat pumps for both the residential and commercial sectors, covering various aspects plus their own product's portfolio. The course is highly accessible as it is available online and takes 3-4 hours to complete. Basic information is provided, such as a heat pump's working principle, refrigeration cycle, heat pump components efficiency calculation, various types of heat pumps and its application to the market. This could be easily replicated as it is a short course with an online format, and could be made neutral by removing the information on the company's portfolio, and its accessibility could attract attendees from across the spectrum, including students and homeowners.

7.5 Germany

In Germany an example has been identified which is funded by Bosch Thermotechnik GmbH, named Planning and installation of heat pump systems according to VDI 4745 sheet 1 category PE, a training seminar. The main aim of the seminar is to provide candidates who are confident in taking responsibilities of the activities in the area of planning, advise, operation and repair of heat pump systems. Alongside other detailed guidance, the training also provides principles and planning – which could lead to increased efficiency in the construction market. The training is mainly for planners and installers of heat pump systems, providing the individual correct guidance for planning, commissioning and maintenance. In order to access the course, the attendee must have a background as a master, technician or engineer in the fields of heating, cooling, ventilation, sanitary or electrical engineering. It is considered that this course could be really useful for planners and installers of heat pump systems, as it covers the end to end aspects of a heat pump system, and is easily replicable. HP4ALL could generally benefit from understanding the methods and approaches that German companies are using to influence the development of the heat pump market and apply this to other countries who may have different priorities.

7.6 Ireland

Two examples of best practices have been identified in Ireland, with an emphasis on upskilling those who already have previous experience or background in plumbing, and who want to expand and build on this experience.

The first is Metac Domestic Heat Pump System's course which is a 5-day training course for those who would like to gain a basic understanding of heat pump installation in a limited period of time. Due to the short nature of the course, it only covers domestic heat pumps, and is a useful tool for those who want to quickly learn the basics of domestic heat pump installation and design. Those who complete the training are also eligible to be listed on the SEAI website as qualified installers, which increases the trainee's credibility in the field as well as expanding their career perspectives. It has been identified that a lack of motivation and knowledge in heat pumps creates a barrier in the replication of this program.





In contrast, the Dundalk Institute of technology provide a longer, level 6 course for heat pump installers, which covers the fundamentals of domestic and small commercial heat pump installation, which lasts for ten weeks. As above, this course also allows successful participants to be listed on the SEAI website as a qualified installer and is relatively accessible, blending online and face to face classes. This model of upskilling has proved both popular and successful as there are numerous similar programs across Ireland.

7.7 Spain

WakeTech in Spain provides a 136-hour long course under the name of Heating and Air Conditioning (HVAC). Unlike many of the other best practice examples, there is no pre-requisite (such as being a qualified plumber) for attendance, making it more accessible. One of the objectives of the course is to provide an understanding of heat pump controls, however the course covers a whole range of heating systems and general electrical systems in heat pumps and refrigerants. One module is focused on the heat pump, and provides an introduction, the basic principles of the equipment, and control circuit equipment like thermostats and components. Entry-level HVAC skills are developed during the course (with theoretical, as well as theoretical knowledge. This course could be replicated anywhere in Europe, as it provides basic insights for those starting their career. Trainees who have completed this course could be beneficial for HP4all's pilot project and could support and encourage homeowners to install a heat pump.

8 Conclusion

The review of various legislative (both European and National), future frameworks and best practice examples has provided a number of learning points for the HP4all project. It is clear that legislative initiatives on both a European and National level to combat climate change and decarbonisation are creating a need for trained professionals in industries such as the heat pump industry. An increased demand will require an increase in the number of professionals who are able to install and service products, and it is necessary that the services provided are of a high quality. Linked with this, another of the main conclusions drawn from this process is the need for future planning in order to prevent a skills shortage in the future, to ensure that workers have the relevant skills for the climate transition, as well as to prepare the work force for any unforeseen events. Adequate funding is the key to underpinning the success of many of these initiatives.

European Legislation

The EU are putting a stronger focus on future-proofing their workforce by putting an emphasis on re- and up-skilling workers to be able to cope with the green and digital transitions. In particular, we can learn from their emphasis on long-term planning, as it is important not to just be reactionary to world events, but to prepare much as is possible. Additionally, encouraging investment in skills and training through the public sector loans facility is important as it allows those who would not otherwise be able to, to access vital funding. This is important as it even with the best plans, these could fail if not suitably financially backed. The most important conclusion to be drawn from the European prospective Frameworks that have been analysed



is the element of sharing best practice with other countries and collaborating in order to ensure that training programmes are the best they can be in all European Member States.

National and Regional Prospective Frameworks

For this analysis, the countries which were analysed were Austria, Ireland and Spain, and examples of national and regional prospective frameworks were found in all three countries. It can be concluded that these countries are taking steps in order to decarbonise, which is having a knock-on effect on the need to develop the workforce's skills in order to combat this problem. High quality training, which is accessible to all professionals, as well as on-the-job learning such as apprenticeships are vital to the future of the workforce. Policies such as increased renovation are important as they contribute to decarbonisation goals whilst also providing increased opportunities for employment and training in the local population.

Best Practice Examples

Best practice examples were identified for the literature review in Austria, Denmark, Finland, Germany, Ireland and Spain. All of these examples found are replicable in other countries or areas because they provide a good framework which give learners high-quality education on the installation and maintenance of heat pumps, in response to the increased demand for qualified installers. Many countries have identified that there are not enough skilled workers in this area, and the examples could provide a basis for the extension of training. In particular, it is important to provide employees with the skills needed by employers, and to ensure that there is a list of qualified practitioners to give the public increased confidence in the quality of work to be carried out.

Appendix 1 – Literature review templates

a. Austria

Name (of prospective framework)	Austrian government programme 2020-2024	Location (National or Regional)	National
Type	Programme	Funding	Government
Start date	2020	End date (if available)	
Website	www.bundeskanzleramt.gv.at/bundeskanzleramt/die-bundesregierung/regierungsdokumente.html (in German)		
Description			
Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?			



To achieve Austria's 2040 climate protection targets (climate-neutrality), the federal government is banning oil, coal and fossil gas in space heating and cooling. The Austrian government programme 2020-2024 defines the phase-out of oil and coal boilers according to the following timeline:

- 2020: ban in new buildings
- 2021: no new oil or coal boilers when changing the heating system
- 2025: mandatory replacement of boilers older than 25 years
- Replacement of all oil and coal boilers by 2035 at the latest

A legal basis for replacing gas heating systems is also being created and foresees:

- no new boilers or connection to the gas network in new buildings as of 2025
- no further expansion of gas networks for space heating, except for compression within existing networks

The decarbonisation of the heating and cooling sectors will require large-scale building renovation and, thus, a larger number of skilled professionals capable of installing high-quality renewable heating systems. The government programme 2020-2024 includes plans for a "campaign for building renovation" and "green jobs campaign".

The national government, together with the Austrian regions, is currently developing the "Austrian Heating Strategy" and "Renewable Heat Act" (Erneuerbare Wärme Gesetz). These will make up the legal basis for implementing the Austrian government programme and achieving a full decarbonising of the heating market. In the future, hiring qualified professionals could be mandatory for the installation of heating systems.

Outcome / Potential Impact

What will be the potential (estimated) impact?

- Decarbonisation of the heating and cooling sector
- Contribution to achieving climate-neutrality in Austria by 2040
- Increased number of skilled professionals capable of installing high-quality renewable systems (including HPs)
- Additional employment in relevant fields in the next 10 years, also in rural areas

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

In order to achieve decarbonisation goals, there is a large need for more skilled professionals capable of installing high-quality renewable systems (including HPs).

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

The "green jobs campaign" aims to raise awareness of the job opportunities that will be available in the future heating and cooling market, and to stimulate interest in relevant training.

Key learning points

What can we learn from this prospective initiative?

The Austrian government recognises the need for a larger number of qualified professionals capable of installing high-quality renewable heating systems.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

- The government's decarbonisation targets are a key driver for the development of the HP market. It offers a large opportunity for the HP4ALL project and must be considered in development the activities of the Upper Austrian pilot region.
- The ESV advises and works with the regional and national governments in developing their programmes, strategies and frameworks. The knowledge gathered through HP4ALL activities can be fed into this process.
- The materials, tools and events of HP4ALL will contribute to decarbonising the heating market in Upper Austria.

Name (of prospective framework)	Upper Austria Long-Term Renovation Strategy	Location (National or Regional)	Regional
Type	Strategy	Funding	Regional government
Start date	2020	End date (if available)	



Website

www.oib.or.at/sites/default/files/oib-ltrs_en.pdf

Description

Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?

In Austria, due to the country's federal structure, building legislation is regional matter. Each region must define the initiatives they will implement to reach the EU goal of climate neutrality by 2050. This includes the key aspect of training in the fields of buildings and energy efficiency.

In Upper Austria, the training of relevant stakeholders through the ESV's Energy Academy, and the training of qualified energy advisors are defined as main elements of the Upper Austrian Long-Term Renovation Strategy.

Energy Academy:

The ESV's Energy Academy offers a variety of training seminars, site-visits, workshops and more on topics relating to energy efficiency and renewable energy, including specialised training courses on HP technologies. Trainings focus on technology innovations, cost-efficient planning, financing and available subsidies, and the overall implementation of energy solutions. They offer the opportunity for important continued education, thus helping to ensure that knowledge and competencies are of high-quality and up to date with market and technology developments. The activities target a wide range of stakeholders along the HP value chain (i.e., persons responsible for energy matters in companies, municipalities and organisations, planners, building services specialists, installers, property developers, energy advisors, energy auditors, producers of building energy performance certificates, architects, providers of energy and building-related products & services, banks).

Training of energy advisors:

Training of energy advisors an essential tool to meet the increasing demand for energy consultations. For many participants it represents further vocational training; for others it is their entry point into a new field of work. In Austria, the regions and the regional energy agencies that manage the energy advice programmes cooperate in the context of an association ("Arge EBA") on training aspects of energy advisors. The ESV is a founding member of this association and is responsible for training energy advisors in the region of Upper Austria. Various levels of comprehensive, multi-day courses are offered and train qualified energy advisors. The basic training for energy advisors consists of 50 hours of training with a final exam. This course can be followed-up by an advanced training of 120 hours with practical training and an exam. Passing the final exam is mandatory for receiving recognition of completion for the courses. In Upper Austria, over 60 such courses have been



held since 1992 with more than 1,000 participants passing the final exam. The curriculum is constantly updated to follow the latest technology and market developments, including those relevant to the HP sector.

Outcome / Potential Impact

What will be the potential (estimated) impact?

- Around 30 training events with more than 1,000 participants take place every year in the Energy Academy. The events strengthen the skills and knowledge about renewable energy and energy efficiency in Upper Austria. Many of the trainings are registered with the Austrian Energy Efficiency Monitoring Centre (EEffG) and points can be collected towards the qualification for becoming an energy auditor or energy advisor.
- Since 1992, 1-2 trainings of energy advisors are carried out per year in Upper Austria. Over 60 courses have been held with more than 1,000 participants passing the final exam. These training will continue to be offered. This will help meet the increasing demand for energy consultations.

These training opportunities contribute to:

- increased awareness, knowledge and skills of relevant stakeholders on building energy efficiency and high-quality renewable energy systems (including HPs)
- more qualified professionals on the market
- higher quality and performance of the installed systems

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

It recognises the positive contribution these training opportunities have had on the clean energy transition in Upper Austria thus far and plans on continuing along these lines to reach the goal of the future.

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

See above in "Description"

Key learning points

What can we learn from this prospective initiative?

- Energy advisers are key players in HP market development and an essential tool to meet the increasing demand for energy consultations.
- By being responsible for the training of energy advisers in Upper Austria, the ESV can ensure the quality of the training and, thus, ensure that qualified professionals are available and can offer effective advice sessions in the region.
- Keeping energy consultants up to date with the latest technical developments, subsidies and current market developments is very important. Therefore, ESV organises regular trainings, networking meetings and other relevant events and information material for its energy advisers.
- Public support and a long-term strategy increase the positive impact of such training programmes.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

- These trainings reach relevant professionals and end users.
- Trainings and events will be an integrated part of the HP4ALL activities for the Pilot Region of Upper Austria.
- Trainings on heat pump technologies are already part of the programme of the Energy Academy, but they will be adapted and/or new courses for HP actors can be added. Also, relevant content can be included in other courses.
- The curriculum is constantly updated to include the latest technical developments and market developments, such as those relevant to the HP sector.

b. France

Name	RECONNU GARANT DE L'ENVIRONNEMENT (RGE)	Location (Country if available)	France
Type (EU or National)	National	Funding	
Start date	2014	End date (if available)	-
Website	https://www.ecologie.gouv.fr/professionnels-du-batiment		

Description (further detailed analysis of the upcoming European and National up-skill policies)

Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?

The “RGE” quality label is a qualification scheme with a set of quality labels for professionals. This qualification is a voluntary process, but it enables the clients to benefit from financial support from the state. From September 1, 2014, the financial aid from the state (tax credits and eco-loan at zero rates) will be granted if the company performing the work is the holder of the reference RGE. It will also be required for operations that benefit from white certificates. Heat pumps installations are considered among the renovation and energy efficiency improvements actions foreseen from the financial aid and so, the technology installers can be included under the sign “RGE”.

Outcome / Potential Impact

What will be the potential impact?

The objective of this initiative is to encourage installers and operators to increase their competence and facilitate the identification of professionals’ ability in energy performance improvements.

Targeted stakeholders

What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)

The RGE scheme addresses several types of professionals: installers of renewable energy equipment; energy efficiency installers and consulting work related to energy efficiency.

Improve and homogenise up-skill policies on an EU level

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

It generates strong demand providing real incentive for professional, especially in very small companies (or self-employed) who may not be part of a professional organisation and therefore are hard-to-reach.

Key learning points

What can we learn from these up-skill policy examples?

This principle is a guarantee for the customer to receive offers technically appropriate and of quality.

In addition, platforms for training professionals are organised at regional level, most often with the support of ADEME (Agence de la transition écologique - Ecological transition agency) and of the professional organisations. Information website managed by ADEME helps consumers choose the right professional for their renovation works since ADEME publishes national list of RGE professionals on their website. Today, approximately 18 000 enterprises under the sign RGE are distributed in France. On the website a directory including the contact details of all professionals and skilled artisans " RGE " is shown. It is a practical tool and easy to use for individuals, with entries by geographic area, by type of work, or even a reverse directory that allows to know in what area a company is competent.

Other tools to assist professionals are developed, such as publicly and freely available technical guidebooks emphasising quality issues, free training courses available online (e-learning), networks of actors created to promote experience sharing and the dissemination of information.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

The initiative defines various points inherent to the activities envisaged by the project. One of the main criticalities relating to training activities is linked to the lack of interest of small installation companies in participating in training activities related to innovative technologies, preferring to focus on traditional technologies. Another important limitation is due to the general lack of visibility of the certified installers that have the skills suitable for proposing innovative tools. In France, regional tools have been developed to bring end users closer to the competent subjects, as well as various actions to disseminate this information and promote experience sharing.

Many European countries do not yet have such tools, while France represents a successful example.

Sources:

- <https://reseu.eu/schemes/france>
- <http://ecocopro.com/en/10994>
- <https://www.s-ge.com/sites/default/files/publication/free/market-study-france-energy-efficiency-sep-2014-s-ge.pdf>
- https://www.ca-eed.eu/content/download/4217/file/3_Example%20of%20a%20certification%20scheme%20RGE%20quality%20label%20-%20France.pdf/attachment

c. Ireland

Name (of prospective framework)	2021 Climate Action Plan	Location (National or Regional)	National
Type	Policy- Updated annual Roadmap and recommendations to achieving net zero greenhouse gas emission by 2050	Funding	Government
Start date	Consultation period until 18 May 2021	End date (if available)	
Website	https://www.gov.ie/en/consultation/5bd95-climate-conversation-climate-action-plan-2021/		

Description

Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?

The 2021 Climate Action Plan is the result of the new Climate Action and Low Carbon Development (Amendment) Bill 2021 which is a legal framework of how Ireland will reduce its greenhouse gas emission by 2050 and transition the country to a climate resilient, bio diversity rich, environmentally sustainable and climate neutral economy.

The 2021 Climate Action Plan is currently in a consultation period until 18 May 2021 receiving inputs from both the public and experts. It is expected that this plan will build on the 2019 Climate Action Plan which contained 183 actions broken down into 619 individual measures.

Of direct relevance to the HP4all project is 8 out of the 619 individual measures in the 2019 Climate Action Plan relate to HP's in the areas of up-skilling & training, awareness campaigns, review of HP grant support, HP standards development, registration schemes for competent HP installers and advance the building regulations for new builds in relation to HP.

What stakeholders will be targeted?

The 2021 climate action plan has the potential to affect all citizens and sectors in Ireland. If the action plan follows the same format as the 2019 climate action plan there will be a list of actions covering all the economic sectors including the built environment

What activities will be carried out?

See Outcome / Potential Impact section

What will the prospective framework do/offer?

It will provide an updated national policy roadmap and recommendations to achieving net zero greenhouse gas emission by 2050. Based on the consultation documentation available it will recommend actions covering all the economic sectors including the built environment.

Outcome / Potential Impact

What will be the potential (estimated) impact?

It is too early to state what exact actions and individual measures will be in the 2021 Climate Action Plan but based on the consultation documentation the following areas of interest to the HP4ALL project will be contributed to:

Call of Expert Evidence:
Area: Built Environment
Question:

- How should Ireland's training and education system scale to meet the skills requirements to achieve this target?
- Should Government consider bringing forward a phase out of the installation of fossil fuel boilers?
- Should further specific changes be made to Ireland's building standards be introduced to support the decarbonisation of Ireland's private and commercial building stock?
- Are there specific technologies that should now be prohibited?
- Are there specific household behaviour changes that should be considered? Should such changes be mandated by way of regulatory changes?

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

Not enough information available to answer this.

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

Not enough information available to answer this.

Key learning points

What can we learn from this prospective initiative?

Policy can directly influence HP deployment and HP training which can be seen by the measures in the 2019 climate action plan and the consultation question in the up-coming 2021 climate action plan.

Expert voices can input into policy.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

The 2021 and subsequent annual Climate Action Plans should be reviewed and considered by the HP4ALL project for possible alignment in the context of the built environment, capacity building, awareness measures and training opportunities.

Expert voices can input into policy, HP4ALL should do regular horizon scans on policy consultation events that impact HP deployment and HP training across regions and countries in Europe

Name (of prospective framework)	Action Plan for Apprenticeships 2021 to 2025	Location (National or Regional)	National
Type	Policy	Funding	Department of Further and Higher Education, Research, Innovation and Science
Start date	April 2021	End date (if available)	
Website	https://www.gov.ie/en/publication/0879f-action-plan-for-apprenticeship-2021-2025/		

Description

Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?

The Action Plan sets out a five year strategy to deliver on the Programme for Government commitment of reaching 10,000 new apprentice registrations per year by 2025. The plan provides a roadmap to a single apprenticeship system and new supports for employers and apprentices.



An apprenticeship is a structured education and training which formally combines learning in the work place with learning in an education or training centre. The completion of an apprenticeship prepares the participant for a specific occupation.

What stakeholders will be targeted?

- Anyone wanting to be an apprentice that meet the minimum criteria
- Employers

What activities will be carried out?

The plan has 5 key objectives:

1. A high quality and innovative approach
2. Employer driven responses
3. Apprenticeships for all – profile of apprenticeships to match the profile of the general population
4. A valued option
5. A single coherent system

What will the prospective framework do/offer?

10,000 new apprentice registrations per year by 2025.

This plan will set out a structure for an apprenticeship system that is flexible and responsive, providing a strong value proposition for employers and potential apprentices, is attractive and easy to engage with, and delivers high standards and sought-after qualifications.

Of the 60 existing apprenticeship programs and 18 programs under development as of March 2021, there are a number of programs that work within the built environment sector and directly link to increasing the capacity to design, install, commission and service HP's, these are: Plumbing, Electrical, Refrigeration, Pipefitting and Air Conditioning.

Outcome / Potential Impact

What will be the potential (estimated) impact?

10,000 new apprentice registrations per year by 2025 – very hard to estimate what % will be in the built environment sector which will impact nZEB and HP deployment.

Expansion of apprenticeship across all sectors of the economy will impact areas of skills shortage such as Retrofitting, Technology Skills, Engineering and FinTech

The structures as set out in this plan also seek to provide increased practical supports and information for employer-led consortia who wish to propose and develop new apprenticeships.

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

The Action plan will merge the two existing systems of apprenticeships (craft and consortia led) into a single system, this new system will improve oversight, delivery, funding and administrative overheads.

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

Not enough information available to answer this.

Key learning points

What can we learn from this prospective initiative?

Apprenticeship scheme will grow therefore the number of apprenticeships in the built environment will grow, so creating an opportunity for HP4ALL to influence HP training and engagement with apprentices about the opportunities within the HP market.

This document provides a structure for developing new apprenticeships from an employer led perspective which has the potential for the development of an apprenticeship which allows more focus on heat pump training, for example a domestic retrofit apprenticeship.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

If this policy is successful in getting 10,000 new apprenticeship per year, HP4ALL could offer additional training modules to those apprenticeships that deal within the built environment.

Engage with the HP supply chain and other relevant experts to understand the exact skill shortage and training needs that a new apprenticeship could provide the solution to that would result in HP deployment.

Name (of prospective framework)	Skillnet Ireland, Climate ready initiative	Location (National or Regional)	National
Type	Funded Training	Funding	Government grants and contributions from enterprise
Start date	April 2021	End date (if available)	5 years from start date
Website	https://www.skillnetireland.ie/		

Description

Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?

Skillnet Ireland is a business support agency of the government, its primary objective is to increase participation in enterprise training by businesses, but as part of the government drive towards a sustainable future Skillnet Ireland has launched the 'Climate Ready' initiative for businesses.

The Climate Ready initiative is designed to equip businesses with the skills they need to respond to climate change.

What stakeholders will be targeted?

Businesses in Ireland,

What activities will be carried out?

Creation of a Climate Ready Academy, which is promoting the following upcoming programs:

Sustainability pass: the purpose of the Sustainability Pass is to develop awareness, knowledge, and skills across the workforce in core sustainability areas including energy, water, waste, biodiversity, sourcing, and responsible citizenship.

Energy Leader Programme: The Energy Leaders Programme, supported by SEAI (Sustainable Energy Authority of Ireland) aims to assist businesses and energy professionals with practical sessions on how to reduce energy waste, deliver cost savings, and protect the environment.

This programme consists of a series of live online workshops and mentoring delivered over 12 weeks.

Masterclasses: Masterclasses are practical and interactive thought-leadership sessions, curated by experts to share best practices in key climate and sustainability related topics.

Outcome / Potential Impact

What will be the potential (estimated) impact?

By the end of 2021 the Climate Ready initiative aims to support over 1000 businesses and 3000 employees via a number of activities including the Climate Ready Academy

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

Not enough information available to answer this.

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

Not enough information available to answer this.

Key learning points

What can we learn from this prospective initiative?

This initiative shows there is training and mentorship available for businesses to respond to climate change including the area of energy efficiency.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

HP4ALL could positively influence aspects of the training or mentorship programs by providing updated HP training etc.

Another network to try get the results of HP4ALL into

Name (of prospective framework)	(of Digital Academy for Sustainable Built Environment (DASBE))	Location (National or Regional)	

Type	Funded Project -	Funding	The Human Capital Initiative Pillar 3 funding
Start date	Nov 2020	End date (if available)	Oct 2025
Website	https://lit.ie/en-IE/Research-Development/Development/Energy/DASBE		
Description			
<i>Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?</i>			
The Digital Academy for Sustainable Built Environment (DASBE) is an educational and training hub for the provision of upskilling, capacity building and education to the building sector on green construction, circular economy, and digital skills. DASBE was successful awarded funding from the Higher Education Authority in Ireland under the Human Capital Initiative pillar 3 scheme. <i>What stakeholders will be targeted?</i> DASBE will provide educational opportunities from QQI level 6 to 9 (apprentices to master degree level) in the area of sustainable built environment, supporting the construction industry. <i>What activities will be carried out?</i> All the activities will be under the umbrella of Sustainable Built Environment, a number of programmes are currently under development. Modules developed in EU funded projects are also incorporated into programmes and progression pathways from vocational level is to be strongly supported. <i>What will the prospective framework do/offer?</i> The main aim of DASBE is to address the education and training skills gaps and needs within the sustainable built environment sector in a dynamic and efficient manner.			
Outcome / Potential Impact			
<i>What will be the potential (estimated) impact?</i>			
DASBE will create a digital platform to enable learners to undertake a range of programs ranging from micro-accreditations, special purpose awards, and minor and major awards focusing on specific topics, needs and requirements in the Sustainable Built Environment sector.			

DASBE will scale up activity in a collaborative way across 3 educational institutes: an increase of approx. 1,000 learners (340% increase) on existing programmes and develop a further 40 new programmes to address the needs of the industry.

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

A strength of DASBE which sets it apart is the ability to rapidly design, develop and deploy education and training programs for construction workers that are flexible and responsive to the needs of the building sector.

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

Not enough information available to answer this.

Key learning points

What can we learn from this prospective initiative?

DASBE's goal to develop training including micro-accredited courses within the Sustainable Built Environment sector shows there is a demand for digital, flexible and sector responsive training.

It is anticipated to develop modules on HP specific training to be included in new programmes or integrated as short modules into existing programmes within the framework of DASBE.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

If the DASBE digital platform contains training that is relevant to the objective of HP4ALL, the training could be included in the knowledge hub or sign posted from the knowledge hub to DASBE.

HP4ALL should engage with organisations like the DASBE to offer support for HP courses in both the development stage and promotion stage.

Name prospective framework)	(of Waterford and Wexford Education	Location (National or Regional)	Regional
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	and Training Board – HP programme		
Type	Funded Training	Funding	Government
Start date	unknown	End date (if available)	unknown
Website	http://waterfordwexford.etb.ie/		

Description

The following information is taken from an interview with a manager at the Waterford and Wexford Education and Training Board under the title of future courses that will impact on HP's.

Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?

Waterford and Wexford Education and Training Board (WWETB) provides a comprehensive range of education and training services throughout Waterford and Wexford and is the largest education and training provider in counties Waterford and Wexford.

The WWETB is well based to identify training gaps in the market as it provides training to apprenticeships working in the construction sector and overs a wide range of courses under the NZEB umbrella. Based on this experience the WWETB has identified the need for specific HP training in the area of HP maintenance and servicing and is currently developing a course.

What stakeholders will be targeted?

Exact details are unknown as to the entry requirements for this course

What activities will be carried out?

Exact details are unknown but the course objective will be to prepare trainees in the area of HP maintenance and servicing.

What will the prospective framework do/offer?

See activities section

Outcome / Potential Impact

What will be the potential (estimated) impact?

The national HP targets and new building regulations in Ireland has seen a large increase in domestic HP installed in Ireland. HP require annual servicing to ensure proper performance and with the increasing number of HP there is a recognized need for a competent workforce in this area. The WWETB aims to increase this workforce by offering specific HP training.

There is no information available as to how many trainees the WWETB aims to train per annum.

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

Based on an analysis of the HP training in Ireland there are no dedicated course for HP maintenance and servicing.

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

See above

Key learning points

What can we learn from this prospective initiative?

The maintenance and servicing of HP will be a demanded skill in the growing HP Irish market place and its very positive that a government educational training board has identified this gap and is developing training in this key area.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

The HP4ALL competency framework needs to include the area of HP maintenance and servicing.

The HP4ALL knowledge hub needs to include the area of HP maintenance and servicing.

HP4ALL should engage with organisations like the WWETB to offer support for HP courses in both the development stage and promotion stage.

d. Spain

Name (of prospective framework)	Spanish Long term Strategy for Deep Building Renovation	Location (National or Regional)	National
Type	Strategy	Funding	-
Start date	2020	End date (if available)	2050

Website

<https://www.mitma.gob.es/el-ministerio/planes-estrategicos/estrategia-a-largo-plazo-para-la-rehabilitacion-energetica-en-el-sector-de-la-edificacion-en-espana>

Description

Briefly describe the National and Regional prospective framework/s: What approach will be taken? What stakeholders will be targeted? What activities will be carried out? What will the prospective framework do/offer?

The Spanish Long Term Strategy for Deep Building Renovation includes a specific section (Section 9) regarding *professionalization, modernization, education and training* in order to promote the emergence of a professional and modernized rehabilitation full service portfolio, more specifically:

Action 9.1. Promotion of the professionalization and supply of a citizenship accessible integral and "turnkey" rehabilitation services portfolio

- Cooperation amongst business and professional sectors to promote a comprehensive sector professionalization, the deployment of comprehensive citizenship accessible "turnkey" services portfolio.
- Enhancement of coordination between different stakeholders (construction companies, financial institutions, ESCOs, etc.) for the creation of bundled product packages.
- Creation of comparison platforms to give visibility to comprehensive rehabilitation solutions alternatives.

Action 9.2. Modernization (R&D&I, industrialization, digitalization, monitoring).

- Reinforcement of research, industrialization, and prefabrication in rehabilitation.
- Digitalization & rehabilitation promotion: BIM methodology, photogrammetry and digital measurement, thermography, etc.
- Facilitation of monitoring and control devices for air conditioning installations, water production hot sanitary, of the mobile elements of solar control, of ventilation, etc.

Action 9.3 Initial and continuing vocational training of workers.

- Promotion of initial vocational training of construction and rehabilitation workers, adapting their profiles to the new market needs (industrialization, digitalization, monitoring, *maintenance of renewable energy installations*, etc.).
- Design of new Modules and Training cycles of intermediate and higher degree related to the rehabilitation and of buildings and building facilities. Encourage dual VET.
- Promotion of continuing vocational training for the reallocation of construction and rehabilitation workers, including the recognition or accreditation of workers' professional skills.



-Use of digital media such as MOOC courses to facilitate access to training for the greatest mass of professionals possible. Take advantage of existing platforms such as "Formate.es" of the Public Employment Service state.

Action 9.4. Improvement of the initial and continuous academic training of technicians.

-Adequation of the academic training of professionals directly related to rehabilitation to the requirements of emerging specific knowledge, technologies, and techniques (constructive pathologies diagnosis, rehabilitation, *thermal installations and renewable energies*, energy communities, thermography, financing models, etc.).

-Incorporation into academic curricula of the contents and skills necessary to perform as competent technicians to carry out Energy Certification, Building Technical Inspections and Evaluations.

Action 9.5 Technical support guides to promote the decarbonization of the existing building stock and promotion of demonstration pilot projects

-Development of technical guides with decision-making related guidelines and recommendations for technicians, assessing the different options for reforming or replacing thermal installations and promote the use of renewable energies in existing buildings, depending on the type (residential building collective, single-family, housing in collective building, offices, etc.), of their particular characteristics (availability of common spaces, basements, roofs, areas available for geothermal surveys, possibilities of collective supply, climatic zone, particular characteristics of the existing heating/cooling, distribution system and heat emitters, etc.)

Outcome / Potential Impact

What will be the potential (estimated) impact?

Not specifically quantified in terms of total increase of qualified workers nor professional accreditations yet, pending on further specific provisions and regulations from the Ministries of Education and Labor.

In any case according to the European Construction Sector Observatory (Improving the human capital basis, 2020) in Spain, up to 100% of the workforce is estimated to require extra skills in EE and RES.

In 2018, as a first step, Spain introduced changes in the public procurement system allowing public administrations to demand the use of BIM methodologies, skills, and trainings in the delivery of projects and work contracts. As a result, the offer of BIM training courses increased significantly, both in universities and professional associations.

In addition, the Spanish General Council for Vocational Training has created working groups to define recommendations for updating the VET system. The Council is comprised by

education and labour authorities, working alongside trade unions and employers' associations. The thematic focus of the new working groups is the improvement of the quality of the Spanish VET system through strengthening dual VET and accreditation of professional competences acquired through work experience, such as apprenticeships.

Comparing with the strengths and weaknesses of the current market

How does the prospective framework compare with the current market?

It is a first step in setting up qualitative targets regarding modernization in education & training

Extra skills and competences it addresses

What are the extra skills and competences that are needed to optimize the results in nZEB-construction and renovation projects that the prospective framework/s address?

More emphasis put on initial and continuing vocational training regarding construction industrialization, digitalization and monitoring and maintenance of renewable energy installations, including the recognition or accreditation of workers' professional skills.

Incorporation into academic curricula of the contents and skills necessary to perform as competent technicians to carry out Energy Certification, Building Technical Inspections and Evaluations.

Key learning points

What can we learn from this prospective initiative?

The Spanish Long Term Strategy for Deep Building Renovation opens up a more comprehensive approach to the modernization of the building sector in the context of sustainability goals including education & training as a central part in its formulation.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

The Spanish Long Term Strategy for Deep Building Renovation will be necessary addressed when formulating the Spanish Regional Development Plan within HP4ALL.

e. European Union wide

Name	Public sector loan facility under the Just Transition Mechanism	Location (Country if available)	
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Type (EU or National)	EU	Funding	1.525 billion (proposed)
Start date		End date (if available)	
Website	https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?lang=en&reference=2020/0100(COD)		
Description (further detailed analysis of the upcoming European and National up-skill policies)			
<i>Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?</i> This proposed regulation is to be considered the third pillar of the Just Transition Mechanism. It will support areas which are negatively affected by the climate transition, (for example areas in which are dependent on the coal industry) and supports public investment through ‘preferential lending conditions’. There will be a grant and a loan facility, with the intention of reducing the financial burden for beneficiaries resulting from the reimbursement of the loan. Grants should not exceed 20% of the loan and priority will be given directly to projects that are directly related to the energy transition. The existence of the grant component allows financial support for investments that would not otherwise raise enough revenue. This third pillar of the Just Transition Mechanism is intended to be complementary with the first and second pillars, as these will be able to support a wider range of investment, whereas this will focus on reskilling, job search assistance and the inclusion of the workers concerned in the job market.			
Outcome / Potential Impact			
<i>What will be the potential impact?</i> The potential impact of this regulation will be that an increased number of areas have the funding to up- and re-skill workers to benefit from the climate transition. This will mean a potential increase in demand for training providers in technologies such as heat pumps and should result in a workforce that is adequately prepared for the green transition.			
Targeted stakeholders			
<i>What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)</i> This proposal will benefit those territories that are most affected by the transition to climate neutrality. It is proposed that a wide range of investments will be covered: energy and transport networks, district heating networks, green mobility, smart waste management, clean			

energy and energy efficiency measures including renovations and conversions of buildings, support to transition to a circular economy, land restoration and decontamination and the up- and re-skilling training and social infrastructure, including social housing. Member States need at least one just transition plan to benefit from this support.

Improve and homogenise up-skill policies on an EU level

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

This regulation improves upskill policies by increasing the amount of support to areas which would otherwise not have access to loans. Without this support, it is possible that many areas would not have the funding to adequately train workers to benefit from the climate transition.

Key learning points

What can we learn from these up-skill policy examples?

That there is a need for government to give support in order for citizens to benefit from the climate transition. Support needs to be in place to ensure that workers have the correct skills for future employment.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

HP4ALL can learn that access to adequate funding is often stopping the up-skilling of a workforce and that adequate funding mechanisms such as the grant and loan system seen here would enable areas that need the most support in responding and dealing with the green transition to be able to support those affected.

Additional sources:

https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/actions-being-taken-eu/just-transition-mechanism_en

https://ec.europa.eu/commission/presscorner/detail/en/IP_20_930

Name	European Climate Law	Location (Country if available)	
Type (EU or National)	EU	Funding	Dependent on Member States' choice of national policies
Start date		End date (if available)	
Website	https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2020/0036(COD)&l=en		

Description (further detailed analysis of the upcoming European and National up-skill policies)

Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?

The European Green Deal set out the European Union's climate ambition and outlined targets to become climate neutral by 2030. The Climate Law regulation will solidify this ambition into legislation. After adoption in the European Parliament, the regulation is now undergoing inter-institutional negotiations.

As well as addressing the union's emissions, the Climate law also addresses the climate transitions' impact on different sectors of the economy and ensuring that they are prepared. This also means preparing 'vulnerable communities' for the transition by ensuring that they have the relevant skills to adapt. The Commission has stated that there is a need to strengthen 'the efforts on climate-proofing, resilience building, prevention and preparedness is essential as well as ensuring a just transition'.

The Climate law regulation will now be submitted to the Council and Parliament for final approval, after fine tuning by legal experts following a consensus being reached during inter-institutional negotiations in April 2021.

Outcome / Potential Impact

What will be the potential impact?

The ultimate intended impact of this law is climate neutrality; however, it should also have the impact of preparing citizens and businesses for the climate transition and ensuring that no one gets left behind.

Targeted stakeholders

What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)

All Europeans are targeted broadly; however, it can be considered that Climate Law also targets sectors and workers affected by climate neutrality ambitions.

Improve and homogenise up-skill policies on an EU level

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

This regulation ensures that there are long term strategies that support the EU's climate ambitions. It provides a long-term plan, a system for monitoring progress, and ensures that

the transition is irreversible. It also ensures predictability for economic actors and ensures that the transition is social fair and cost-efficient.

Key learning points

What can we learn from these up-skill policy examples?

We can learn from the Climate Law that we must put long term planning and support in place when societal shifts such as the green transition are predicted. In the case of up-skilling, the Climate Law ensures sector-specific roadmaps – this is something that industries can learn from to ensure their crisis resilience and to support their employees.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

From the Climate Law, HP4all can learn that training and upskilling requires long term planning to be made, in order to ensure that there is not a skills deficit in the future. Governments and industries must look into the future and try to prepare employees the best they can in order to be resilient to change.

Additional sources:

https://ec.europa.eu/clima/policies/eu-climate-action/law_en

Name	European Skills Agenda for sustainable competitiveness, social fairness and resilience	Location (Country if available)	
Type (EU or National)	EU	Funding	The EU is giving around 85 billion euros of funding to invest in new skills through different programmes.
Start date		End date (if available)	
Website	https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?lang=en&reference=COM(2020)0274		
Description (further detailed analysis of the upcoming European and National up-skill policies)			
<i>Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?</i>			
The ‘European Skills Agenda is a five-year plan to help individuals and businesses develop more and better skills.’ These will be put to use by strengthening sustainable competitiveness, ensuring social fairness everywhere in the EU and building resilience to crisis. The European Skills Agenda includes 12 actions organised around four building blocks which are ‘a call to join forces in a collective action’, ‘actions to ensure that people have the right skills for jobs’,			

‘tools and initiatives to support people in their lifelong learning pathways’ and ‘a framework to unlock investments in skills’.

This file is currently being prepared by the European Parliament, following the communication by the Commission in July 2020, and is in its initial stages. The aim of the communication is to provide support through the twin transitions (green and digital), as well as helping Europe to recover from the impact of the pandemic.

Outcome / Potential Impact

What will be the potential impact?

There will be an increase in the number of adults who undertake training and increase their relevant skill sets to cope with the green and digital twin transitions. A clear strategy will be set and financial funding will help increase the impact of this policy.

Targeted stakeholders

What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)

Adults with low qualifications and who are job seeking, and others who could benefit from upskilling.

Improve and homogenise up-skill policies on an EU level

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

The learning sector is improved, as the Commission now has a detailed plan to support all types of education, from life-long, to university and vocational training. This creates plans to ensure that the future workforce is resilient and prepared for the green and digital transitions. Additionally, the sector will also greatly benefit from the increase in support through funding and the greater importance that has been placed upon learning in all forms.

Key learning points

What can we learn from these up-skill policy examples?

We can learn that there is a need to plan in advance for the challenges that could affect the future workforce and to respond to these challenges before they are faced. For example, training construction workers in new skills needed for the green transition will make them less vulnerable to unemployment in the future.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

As above, long term planning is needed in order to ensure that industry and workers are ready to benefit from societal change, such as the change that the green transition will bring with it.

Additional sources:

<https://ec.europa.eu/social/main.jsp?langId=en&catId=1223&moreDocuments=yes>

Name	The Renovation Wave Communication	Location (Country if available)	
Type (EU or National)	EU	Funding	
Start date		End date (if available)	
Website	https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en		
Description (further detailed analysis of the upcoming European and National up-skill policies)			
<i>Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?</i>			
The renovation wave aims at boosting the renovation of buildings in the European Union, as it is believed that this is crucial in achieving a climate-neutral Europe by 2050. The Commission intends to double the renovation rate in the next ten years. The renovation of buildings is also a labour-intensive sector, which means that adopting such a policy should impact employment and is part of the Commission’s plan for COVID-19 recovery, with estimations that the Renovation Wave will create 160,000 additional green jobs in the construction industry. The Renovation wave will build on the clean energy for all Europeans package’s measures. Following a 4-week public consultation and press release in 2020, the Renovation Wave Communication will be discussed by the European Parliament, the European Council and other EU institutions, as well as by civil society and other stakeholders ‘with a view to contributing to necessary actions.’ There will also be further discussion in order to cover potential legislative and non-legislative measures and financing tools to take into the different levels of action so that renovation in the EU can be made faster and more efficient.			
Outcome / Potential Impact			
<i>What will be the potential impact?</i>			

The impact will be that an increased number of buildings in the EU will be renovated. This will have a further knock-on effect: 160,000 additional green jobs will be created, the quality of life of Europeans will be increased, energy poverty will be addressed as well as the health and wellbeing of building occupants who are to be considered vulnerable. In addition to these impacts, it is intended that Europe's greenhouse gas emissions will go down, as building use currently contribute highly to these.

Targeted stakeholders

What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)

Those in the building industry, who have the skills or technology to renovate buildings to make them more efficient.

Improve and homogenise up-skill policies on an EU level

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

The renovation wave improves the emphasis and lends support to the EU building sector, by placing importance on its role in improving the energy efficiency of buildings. By creating such a large number of green jobs in the sector, it is supporting both the industry and workforce in adapting and benefiting from the green transition.

Key learning points

What can we learn from these up-skill policy examples?

The Renovation Wave teaches us that there are other, less direct ways to support up-skilling. The intention of this policy is to increase renovation rates in the EU. This will create jobs, which will in turn increase the demand for up-skilling. While there is always room for direct funding, policies such as this go a long way in increasing the green skill of the workforce.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

That in order to increase the number of workers who re- and up-skill, focus must also be put on areas such as the construction industry, as this also has the knock-on effect of increasing the focus on training.

Additional sources:

https://ec.europa.eu/energy/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en

Name	European Education Area	Location (Country if available)

Type (EU or National)	EU	Funding	
Start date		End date (if available)	2025
Website	https://ec.europa.eu/education/education-in-the-eu/european-education-area_en		
Description (further detailed analysis of the upcoming European and National up-skill policies)			
<i>Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?</i>			
The European Education Area (EEA) was created in order to support EU Member States to build ‘resilient and forward-looking education and training systems.’ This project ties in with Next Generation EU (the EU’s covid recovery plan) to as the Commission believes that the way to lead the EU out of the crisis is through the digital and green transitions. Structural barriers learning and skills development must be prevented in order to prevent an impact on citizen’s employment prospects. Von der Layen has committed to making the European Education Area a reality by 2025 in her ‘political guidelines for the next European Commission 2019-2024’, and the first packages of measures were adopted in 2018 and 2019. The commission communication on achieving the EEA was published in September 2020, and is guided by six dimensions: quality, inclusion and gender equality, green and digital transitions, teachers and trainers, higher education and geopolitical dimension. In February 2021, the council approved the Resolution on this subject, with an own-initiative report on the EEA also being worked on by the European Parliament.			
Outcome / Potential Impact			
<i>What will be the potential impact?</i>			
In terms of green skills, there will be an increase in funding for training and education in order to help workers adapt to the green transition. It is intended that action is geared towards changing behaviours and boosting skills as well as creating a conducive environment for this (for example with the renovation wave encouraging an increase in renovation). There will also be an improvement and support given to the other dimensions of the EEA, such as directly to training and higher education.			
Targeted stakeholders			
<i>What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)</i>			
Training providers, those affected by the green transition, those in education.			
Improve and homogenise up-skill policies on an EU level			

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

This package improves and strengthens the EU's education and training provision by placing an emphasis on its importance and bringing in adequate funding. It ensures that industry and workers are future-proofed against any further crisis.

Key learning points

What can we learn from these up-skill policy examples?

We can learn from this policy that a greater emphasis must be put on education, as it has a significant impact on the future economy. Additionally, cooperation, as seen here between Member States, can lead to a better quality of education and training, as best practices are shared.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

HP4ALL can learn from this that training, and upskilling can really benefit from cross-border cooperation, as well as future-proof plans and adequate funding. We can also learn that education and training is going to take an important position in the coming years.

Name	Brexit adjustment reserve	Location (Country if available)	
Type (EU or National)	EU	Funding	First round – EUR 4 244 832 000 and second round EUR 1 126 162 000
Start date	1 st July 2020	End date (if available)	31st December 2022
Website	https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=2020/0380(COD)&l=en		

Description (further detailed analysis of the upcoming European and National up-skill policies)

Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?

Following Britain's exit from the European Union, it was decided that the Brexit adjustment reserve would be created 'in order to strengthen economic, social and territorial cohesion and show solidarity with Member States, regions and sectors' that have been most affected. One of the specific sectors which will be given support is the re-skilling and training of citizens returning to the EU from the UK, as well as giving economic support to other sectors

negatively affected by Brexit. Similar funds such as these exist, such as those to mitigate the effects of the climate transition like InvestEU.

Outcome / Potential Impact

What will be the potential impact?

Those who are reintegrating back into the EU labour market will be helped with this, as well as given short term work schemes, and help with re-skilling and re-training.

Targeted stakeholders

What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)

Those affected by Brexit, such as those who are intending on reintegrating back into the EU labour market. Affected economic sectors, and border controls are also targeted.

Improve and homogenise up-skill policies on an EU level

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

It is important to give economic support to those who have been affected by events such as Brexit, in order to help them develop the necessary skills in order to reintegrate back into the labour market with the necessary skills.

Key learning points

What can we learn from these up-skill policy examples?

That world events must be monitored in order to ensure that workers are not negatively affected by lacking the necessary skills and training. Additionally, such events could be used to not only help workers to reskill, but to also retrain them to cope with the green transition.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

A close eye must be kept on world events, in order to plan adequately and to prepare to ensure that workers of the future are not left under skilled.

Additional sources:

https://ec.europa.eu/commission/presscorner/detail/en/IP_20_2536

Name	ERASMUS programme for education, training, youth and sport 2021-2027	Location (Country if available)	
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Type (EU or National)	EU	Funding	30 billion EURs (2021-2027).
Start date		End date (if available)	
Website	https://oeil.secure.europarl.europa.eu/oeil//popups/ficheprocedure.do?reference=2018/0191(COD)&l=en		
Description (further detailed analysis of the upcoming European and National up-skill policies)			
<i>Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?</i> In the next ERASMUS+ programme, the Commission aims to support learning mobility opportunities and cooperation between stakeholders. At an operational and a policy level it aims to ‘foster inclusion, excellence, creativity and innovation in education, training, youth and sport’. In particular, the new programme will be accessible to a larger number of people, such as those in vocational education or training, non-formal learning and more. There will be a focus on people from all social backgrounds, such as people with disabilities, migrants and those living in remote areas. European citizens will be helped to acquire new skills in future orientated areas such as climate change and clean energy, and a wider target group will be addressed (such as adult learners and those outside of the EU). The programme will help to promote a European identity, as well as strengthening the EU’s relations with the rest of the world and cooperation with third countries.			
Outcome / Potential Impact			
<i>What will be the potential impact?</i> The improvement of the ERASMUS+ programme, as well as an increase in the scope of the areas and stakeholders affected.			
Targeted stakeholders			
<i>What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)</i> This will affect all of those involved in learning, whether this be through university education, vocational training, or adult learning.			
Improve and homogenise up-skill policies on an EU level			
<i>How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?</i>			

This EU regulation improves cooperation in the field of education and training, bringing more people together to improve skills across and beyond the EU.

Key learning points

What can we learn from these up-skill policy examples?

Cooperation is important, as is focussing on a wide range of social situations in order to be inclusive in the uptake of new skills in the green transition.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

Those who are not usually candidates for training in the renewable energy sector could be targeted, which would lead to a greater range of people in the sector and strengthen the number of workers.

Name	Proposal for a Council Recommendation on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience.	Location (Country if available)	
Type (EU or National)	EU	Funding	Funding of vocational education and training comes from other sources.
Start date		End date (if available)	
Website	https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD:2020:0123:FIN:EN:PDF		
Description (further detailed analysis of the upcoming European and National up-skill policies)			
<i>Describe the planned implementation frameworks of directives that aim to improve and homogenise this sector on an EU level: What approach is taken? What activities are carried out? Why are these regulations being rolled out?</i>			
The Council of the European Union adopted a recommendation on vocational education and training for sustainable competitiveness, social fairness and resilience. This defines the key principles that ensure vocational education and training is adapted to the changing needs of the labour market and provides learning for both young people and adults. The Recommendation replaces the EQAVET (European Quality Assurance in Vocational Education and Training) and includes an updated EQAVET Framework with quality indicators and descriptors. It places a strong focus on the increased flexibility of vocational			

education and training, reinforces opportunities for work-based learning and apprenticeships and improved quality assurance.

Outcome / Potential Impact

What will be the potential impact?

Vocational education and training will be better suited to the labour market, and the quality of both will be higher, ensuring that the recipient makes the most of their time in education.

Targeted stakeholders

What stakeholders will be targeted? (building professionals and/or blue-collar workers across the building design, operation and maintenance value chain)

Those in industries which benefit from vocational education and training and quality apprenticeships.

Improve and homogenise up-skill policies on an EU level

How do the EU regulations (planned implementation frameworks of directives) improve and/or homogenise this sector on an EU level? Why?

This Council Recommendation replaces previous frameworks to ensure that education is relevant for the labour market whilst ensuring a high quality of education and on the job training.

Key learning points

What can we learn from these up-skill policy examples?

We can learn that education not only needs to be adapted to the labour market, but also needs to be high quality.

Relevance to HP4ALL

How can we apply these learning points to HP4ALL?

There is need to see what gaps in the labour market exist and adapt vocational education and training to suit this. Additionally we must ensure the quality of education and training.

Additional sources:

[https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=SWD\(2020\)0123&l=en](https://oeil.secure.europarl.europa.eu/oeil/popups/ficheprocedure.do?reference=SWD(2020)0123&l=en)