

INCLUSIVE EMPOWERGEN:

**EU Guidelines for Local and Regional Governments in
Advancing Employment and Inclusion of Third-Country
Nationals in Construction and Renewable Energy Sectors**

**Conference
of Peripheral
Maritime Regions
(CPMR)**

Authors:

Leila Giannetto

Francesco Camonita

FULL STUDY DOCUMENT



POWGEN

Contents

List of Acronyms	5
Executive summary	10
1. Introduction	13
1.1. EMPOWERGEN Guidelines: building on the POWGEN Good Practices report	13
1.2. A changing geopolitical and policy context	15
1.3. A people-based and place-based approach	17
1.4. Structure of the Guidelines	18
2. The EU context	20
2.1. Competitiveness and the changing priorities of the European green transition	20
2.2. Labour market shortages and skills mismatch in the EU	22
2.3. EU policies and tools to address skills gaps and shortages	24
2.4. EU funding supporting skills, inclusion, and the green transition	26
3. Methodology	28
3.1. EMPOWERGEN Guidelines participatory approach	29
4. Territorial and individual challenges of the green transition for the EU labour markets	31
4.1. A place-based approach to the effects of green transition on regions	32
4.2. A people-based (and intersectional) approach to the effects of the green transition on individuals	35
4.3. Labour market inclusion of TCNs and disadvantaged groups and the role of regional and local governments	36

5. When practices are good: main challenges and lessons learned for regional and local governments	42
5.1. POWGEN Good Practices Report: lessons learned and key challenges	43
5.2. Additional practices researched for this report	53
6. Analysing practices: which potential for sustainability and transferability?	72
6.1. SWOT analysis: Strengths and Opportunities vs. Weaknesses and Threats of practices analysed	72
6.2. Sustainability and transferability through the experiences of POWGEN pilots	79
7. Concluding remarks	84
8. Recommendations for regional and local actors	87
8.1 High Level Recommendations on how to tackle labour market inclusion in the RE and construction sectors of TCNs	87
8.2 Practical recommendations from POWGEN stakeholders to local and regional authorities for the implementation of pilots and trainings	90
References	97

Document Description	
Document Number	D4.4
Document Title	INCLUSIVE EMPOWERGEN: EU Guidelines for Local and Regional Governments in Advancing Employment and Inclusion of Third-Country Nationals in Construction and Renewable Energy Sectors
Work Package	WP4
Deliverable Type	Report
(Updated) Contractual Date of Delivery	30.09.2026
Actual Date of Delivery	30.09.2026
Authors	Leila Giannetto (CPMR Expert), Francesco Camonita (CPMR)
Contributors	Lara Rot (ABD) and all POWGEN partners
Acknowledgements	Special thanks to the EU Cluster Team for the guidance and peer-review of final study document: Federica Giardina (MedCities), Anila Noor (NWC), and the IEECP team of Marine Perrio, Samuele Livraghi and Mara Florina Oprea
Dissemination level	PU

June 2026

Funded by the European Commission's *AMIF-2023* programme, is coordinated by the [Asociación Bienestar y Desarrollo ABD](#) in collaboration with [ECOSERVEIS](#) (Spain) , [CRESCER](#) (Portugal), [PRO ARBEIT](#) (Germany), [C.I.D.I.S](#) (Italy), [Regione Campania](#) (Italy) and the [Conference of Peripheral Maritime Regions CPMR](#). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Commission, neither the European Commission can be held responsible for them.

List of Acronyms

Acronym	Full Form
ABD	Asociación Bienestar y Desarrollo
ACHIEVE	Actions in low-income Households to Improve energy efficiency through Visits and Energy diagnosis
AMIF	Asylum, Migration and Integration Fund
BBVA	Banco Bilbao Vizcaya Argentaria
CCPI	Climate Change Performance Index
CEDEFOP	European Centre for the Development of Vocational Training
CEE	Central and Eastern Europe
CPMR	Conference of Peripheral Maritime Regions
CSO	Civil Society Organisation
DG HOME	Directorate-General for Migration and Home Affairs (European Commission)
EAC	Energy Advising Centre

Acronym	Full Form
EAP	General Union Environment Action Programme
EIB	European Investment Bank
EIGE	European Institute for Gender Equality
ELA	European Labour Authority
EKIOLA	Energy community Citizens' involvement (Basque Country)
EMN	European Migration Network
EMPOWERGEN	Inclusive EMPOWERGEN project (EU Guidelines for TCN inclusion in green sectors)
ERRIN	European Regions Research and Innovation Network
ESDE	European Social Development Enterprise
ESF+	European Social Fund Plus
ESPON	European Spatial Planning Observation Network
ETF	European Training Foundation

Acronym	Full Form
EU-OSHA	European Agency for Safety and Health at Work
EURES	European Employment Services
EVE	Basque Energy Agency
GENDER4POWER	Generating Equity, Nurturing Diversity, Energising Resilience 4 Power Against Energy Poverty
GP	Good Practices
IAI	Istituto Affari Internazionali
IEECP	Institute for European Energy and Climate Policy
IIPLE	Istituto Istruzione Professionale Lavoratori Edili della Provincia di Bologna
ILO	International Labour Organization
IMISCOE	International Migration, Integration and Social Cohesion in Europe
IOM	International Organization for Migration
INTERREG	EU Territorial Cooperation Programme

Acronym	Full Form
ISCO	International Standard Classification of Occupations
JRC	Joint Research Centre (European Commission)
KREAN	Basque energy and sustainability agency (co-creator of EKIOLA)
LEADER	Liaison Entre Actions de Développement de l'Économie Rurale
LIFE	EU Programme for the Environment and Climate Action
NEET	Not in Education, Employment, or Training
NGO	Non-Governmental Organisation
NUTS	Nomenclature of Territorial Units for Statistics
NWC	New Women Connectors
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
PED	Positive Energy District

Acronym	Full Form
PNRR	Piano Nazionale di Ripresa e Resilienza (Italian National Recovery and Resilience Plan)
POWGEN	Empowering migrants for inclusion in the renewable energy sector (EU project)
PV	Photovoltaic
RE	Renewable Energy
RENOVERTY	Home Renovation Roadmaps to Address Energy Poverty in Vulnerable Rural Districts
SEPOV	Summer Energy Poverty
SOCIALNRG	Social Housing Energy Communities project
STEAM	Science, Technology, Engineering, Arts and Mathematics
STEM	Science, Technology, Engineering and Mathematics
STEAMigPOWER	STEAM approaches at higher education for Migrants, refugees and asylum seekers' emPOWERment
SWOT	Strengths, Weaknesses, Opportunities and Threats
TCN	Third-Country National

Acronym	Full Form
UNDP	United Nations Development Programme
UNESCO-UNEVOC	UNESCO International Centre for Technical and Vocational Education and Training
VET	Vocational Education and Training

Executive summary

The **EMPOWERGEN EU Guidelines** are a theoretical and practical tool designed to support **local and regional governments** across the EU in advancing a socially inclusive green transition, focusing on the **labour market inclusion of Third-Country Nationals (TCNs) in the construction and renewable energy sectors**. They focus specifically on how **regional and local administrations and their connected actors**, including vocational training institutions, civil society, employers, are linking climate objectives to social inclusion.

The **policy landscape has shifted considerably** since the European Green Deal. Geopolitical tensions, the war in Ukraine and in Iran, energy market volatility, and rising security spending have constrained public funding for renewables and green skills. The EU's 2025 **Clean Industrial Deal** reoriented the strategy from a green to a "clean" transition, prioritising competitiveness alongside decarbonisation. Yet the urgency persists: the EU lags on most environmental targets, **labour shortages in construction and renewable energy remain acute**, and demographic ageing is shrinking the workforce. Over **one million new green jobs are projected by 2030**, but supply falls short of demand, particularly in medium- and low-skilled occupations such as retrofitting, solar panel installation, and heat pump maintenance.

TCNs represent 4.4% of the EU workforce and are disproportionately present in sectors facing persistent shortages. However, they remain largely in low-skilled positions, frequently overqualified due to **fragmented skills recognition procedures**. Key barriers include language gaps, non-recognition of qualifications, bureaucratic hurdles, employer bias, and precarious legal status. The Guidelines argue that **TCN inclusion is both a social integration imperative and an economic necessity**: the green transition cannot advance without a diverse, skilled workforce reflecting Europe's demographic realities. Specific challenges also affect **refugees and asylum seekers**, who often lack pre-existing social networks facilitating job access, and frequently endure mental health issues stemming from traumatic past experiences and protracted inactivity in reception centres.

The Guidelines therefore adopt a dual approach:

- A **people-based perspective** acknowledges that the transition affects individuals differently by gender, age, migration background, and socioeconomic status;
- A **place-based perspective** recognises that regions experience the transition in distinct ways, such as coal-dependent areas face reskilling challenges, rural zones confront infrastructure gaps combined with fewer employment opportunities and services, and urban areas deal with housing pressures and cooling poverty.

Effective policy requires **interventions tailored to specific territorial and community characteristics**.

Drawing on a **mixed-methods approach** combining desk research, stakeholder interviews, focus groups, and participatory validation at POWGEN transnational events in Barcelona (May 2025), Lisbon (February 2026), the Guidelines analyse over 20 existing initiatives. Building on the POWGEN Good Practices (GP) Report, which analysed over 10 initiatives across Europe, the Guidelines extend the geographical scope with an additional 10+ practices. A comparative **SWOT** (Strengths, Weaknesses, Opportunities, and Threats) **analysis** across 8 EU countries plus Switzerland and Turkey yields the following findings:

- **Strengths:** inclusive project and training designs that consider language and cultural diversity of TCNs; peer-support mechanisms generating mutual benefits for participants and communities; strong local partnerships with job centres, municipalities, and businesses; short, accessible training formats (2–10 months); and participatory, place-based methodologies involving beneficiaries in programme design.
- **Weaknesses:** persistent gender imbalances and workplace harassment in male-dominated sectors; language barriers; fragile survival of social enterprises; logistical obstacles (transport, housing); and fragmentation of small-scale training initiatives.
- **Opportunities:** green jobs as a driver of rural revitalisation; multi-stakeholder governance networks; high employability of trained workers; digitalisation of training content; circular migration and “brain gain” potential; and advancing gender equality through renewable energy roles.

- **Threats:** policy volatility in green job markets; dependence on short-term EU project funding; absence of harmonised certification systems; and persisting gender inequalities compounded by inadequate care infrastructure.

As a consequence, the Guidelines set out **eight general recommendations** and a **practical five-step pathway** for local and regional authorities. Key recommendations include:

- **broadening funding networks** among local, regional, and cross-border actors to move beyond volatile public funding cycles;
- taking a **regional lead in defining green job certifications and curricula**, particularly for solar panel installers, energy advisors, and retrofitting workers;
- promoting **blended training, micro-credentials, and relevant EU tools**;
- addressing **people-based needs** (anti-harassment policies, childcare, fair wages, diversity training) and **place-based realities** (urban-rural divide, renewable energy communities, transport);
- tackling the **lack of intra-EU mobility for TCNs**, a major obstacle given the sector's cross-border labour needs.

The **five-steps practical framework** guides authorities through: **(1)** assessing regional skills demand and supply, including informal competences; **(2)** supporting training design with paid dual training (combining on-the-job experience with theoretical training), micro-credentials, and childcare; **(3)** ensuring fair, decent, and long-term placement through funded apprenticeships and post-project continuity; **(4)** envisaging sustainable and long-term solutions for workers and territories, including social housing and STEM promotion; and **(5)** ensuring stakeholder coordination through institutionalised multi-actor clusters and horizontal coordination across policy departments.

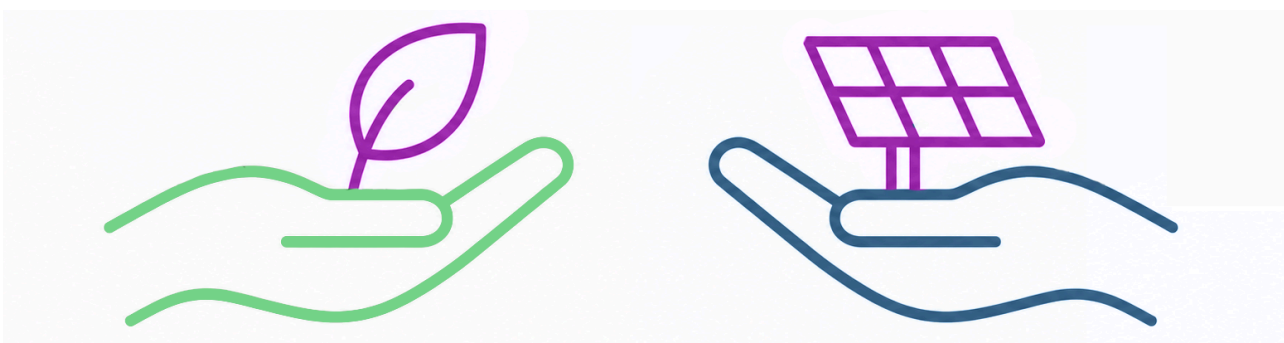
Overall, the Guidelines demonstrate that **bottom-up, people-centred approaches can bridge skills gaps and promote inclusion**, but their long-term impact depends on **coherent certification systems, gender-sensitive labour policies, stable funding, and strong multi-level governance**. The experiences documented through POWGEN show that solutions exist and are born out of collaboration, experimentation, and fairness. **Local and regional governments are uniquely positioned to drive this transformation**, linking global climate objectives with local realities to make the green transition a lever for inclusion, resilience, and territorial cohesion across Europe.

1. Introduction

1.1. EMPOWERGEN Guidelines: building on the POWGEN Good Practices report

The **EMPOWERGEN EU Guidelines** are a theoretical and practical tool aimed **to support local and regional governments in the EU¹** in advancing a socially inclusive green transition, focusing specifically **on the labour market inclusion of Third-Country Nationals (TCNs) in the construction and renewable energy sectors (RE)**.

This document builds directly on and complement the findings of the POWGEN 2025 Report on good practices on training and labour access of migrant people in the renewable energy and refurbishment sector (hereinafter: POWGEN GP report – Galvany et al., 2025). This first report gathered, analysed, and compared 10+ initiatives and policies across Europe aimed at promoting the inclusion of TCNs in the aforementioned industry sectors. Executed during the initial stage of the relative EU project – POWGEN², the POWGEN GP report presented innovative solutions of inclusion emerging not only from the national level but also from the local and regional level and pointed to 10 takeaways for the development of further good practices of TCNs training and labour market inclusion in the RE and construction sector, focusing specifically on empowering women and including more intersectionality perspectives.



¹ For regional and local governments in the EU we consider governments of NUTS 2 and 3 territorial units but also governments at the municipal level, including in remote and rural areas.

² The POWGEN (power generation) project aims at improving the labour inclusion opportunities of TCNs and promote their professional growth in key areas for the sustainable future of society and contribute to the creation of more inclusive work environments. From April 2024 to September 2026, POWGEN implements five local pilots in four European Union countries (Spain, Portugal, Germany, and Italy) plus a smaller replication scale experience in the Netherlands. For further information see: <https://powgenproject.org/>.

The **POWGEN GP report** highlights that integrating third-country nationals into the renewable energy and construction sectors requires **coordinated action across training, migration, inclusion, and funding**. **Training** should provide homologated certifications, recognize foreign qualifications, and create flexible career pathways, while a European-wide agreement on minimum standards would reduce administrative barriers and support mobility. **Legal regularisation**, which should be facilitated through access to formal education and work contracts, is key to preventing exploitation of TCNs, their potential fall into irregularity, and enabling their long-term labour market integration. **Language training and cross-sector cooperation**, especially for vulnerable groups such as women and unaccompanied minors, could help strengthen both social and professional inclusion. Moreover, **addressing gender inequality** in these largely male-dominated sectors requires targeted support for migrant women, including tailored training, mentoring, childcare access, and workplace policies that promote diversity. Finally, one of the main insights emerging from the GP report is that the **success of such initiatives depends largely on their ability to mobilise multiple actors and funding across governance levels**. Indeed, stable, long-term funding and partnerships among NGOs, public institutions, and private companies are essential to maintain impactful initiatives. These lessons have informed the design of the present Guidelines, which seek to build on this previous work to then promote the further development of good practices together with actionable recommendations for policymakers and practitioners operating at regional and local levels.

The **EMPOWERGEN Guidelines**, differently from the POWGEN GP report, **focus specifically on how to empower regional/local administrations** – and other connected actors at the local and regional levels (e.g., vocational training institutions, civil society actors supporting migrants, and employers) – **to experiment with models that link climate objectives to social inclusion**, addressing not only the demand for new skills but also the need to ensure fair access to decent work.

While these Guidelines build upon the previous work of research, they also explore additional innovative experiences to **broaden the geographical scope**, enabling comparisons particularly among countries with different levels of competence and dependence on renewables, including a wider diversity of job types within the renewables and refurbishment sectors, and focusing on locally and regionally driven initiatives. EMPOWERGEN Guidelines also benefit from the participative approach used

during transnational POWGEN meetings throughout the project, with the **active involvement in the definition of practical recommendations of local, regional and EU clusters** composed of public institutions, counsellors, Civil Society Organizations (CSOs), training centres and job centres, employers in the RE and construction sector.

The aim is to recognise that **many EU local and regional actors are grappling with similar challenges**. For example, regions that are economically heavily dependent on coal mining and other “brown” energy are experiencing different impacts of the green transition compared to regions that already fully transitioned to renewables, such as the need to re-skill local workers or to find and train new workforce. At the same time, **local and regional governments have some leeway to take proactive measures** to address the imbalances generated by the green transition, particularly when it comes to fostering a more inclusive and green labour market, by **acknowledging once and for all that integration of TCNs starts at the local (and regional) level** (OECD, 2018), even though cooperation with and support from the other levels of government remains crucial³.

1.2. A changing geopolitical and policy context

The context in which the good practices of the 2025 report were identified **has evolved rapidly in the last years**. More specifically, the **geopolitical and macroeconomic environment of the EU has shifted considerably** since the initial roll-out of the European Green Deal and the Next Generation EU recovery package⁴. The combined effects of the wars in Ukraine and (more recently) in Iran leading to shortages in fossil fuels⁵, energy market volatility, inflationary pressures, and the reorientation of national budgets towards security and defence have led to a significant unpredictability of public funding for renewable energy deployment, building retrofitting, and green skills programmes. What had been envisioned as an unprecedented investment cycle in the decarbonisation of Europe’s economy is now constrained by tighter fiscal policies and competing policy priorities (see **Section 2** for more details).

At the same time, **labour shortages** are particularly acute in construction, where medium- and low- skilled workers are needed, but also in renewable energy installation, and energy-efficiency retrofitting (i.e., fields that rely on technical and

³ See:

<https://www.coe.int/en/web/congress/-/-integration-starts-locally-but-needs-national-support-congress-urges-stronger-co-operation-between-levels-of-governance>

⁴ For further details on EU’s current situation please see Section 2.

⁵ See: <https://global-energy-flow.com/shortages/>.

vocational skills). Across many EU Member States, **demographic ageing** has accelerated, reducing the number of available workers in the lower and mid-skilled categories (Biagi, Deuster & Natale, 2025). Meanwhile, the **demand for qualified labour in sectors essential to the green transition** such as skilled workers in the construction sector (e.g., installation of heat pumps, solar panels, construction of wind farms, new civil engineering skills, etc.) **continues to outpace supply** (European Commission, 2025).

In this context, the inclusion of TCNs and migrant workers in green transition sectors is not only **a question of social integration but also an economic necessity** for business owners/employers. Yet, **migrants often face barriers** that prevent them from contributing fully to this transformation: **non-recognition of qualifications, limited access to technical training, language barriers, and discriminatory recruitment practices** (see **Section 3**). Local and regional authorities are increasingly aware that addressing these challenges is key to unlocking both social and economic potential of their territories. The **green transition cannot advance without a corresponding effort to build an inclusive labour force** that reflects Europe's demographic realities and diversity.

Meanwhile, **the effects of climate change continue to intensify, while national and European governments' action lags behind**. The summer of 2025 marked yet another record in global and European temperatures, with prolonged heatwaves across Southern and Central Europe resulting in thousands of deaths. These events have underscored the human cost of delayed mitigation and adaptation efforts, but they have also drawn attention to the social inequalities embedded in the climate crisis. The phenomenon of "*cooling poverty*" or Summer Energy Poverty (SEPOV – European Commission & Cornelis, 2025), where households cannot afford to maintain safe indoor temperatures during heatwaves, has joined energy poverty as a major concern for social policy (De Cian et al., 2025).

Local and regional governments find themselves at the forefront of responding to these intertwined crises: **managing energy transitions, supporting vulnerable populations, and ensuring that no community is left behind**. The lessons of recent years are clear: climate change is not an abstract environmental issue but a lived social reality, affecting people and territories in deeply uneven ways.

1.3. A people-based and place-based approach

The EMPOWERGEN Guidelines consider these dynamics as a starting point. They are guided by the conviction that **the green transition must be both people-based and place-based**.

[BOX 1]

A *people-based approach* acknowledges that **the transition affects individuals and groups differently** depending on their gender, age, migration background, education, and socioeconomic status.

A *place-based approach* recognises that **regions and localities experience the transition in distinct ways**: rural and urban areas face different challenges; coastal and inland regions have different vulnerabilities; and industrialised territories have different starting points than those still dependent on traditional sectors.

Effective policymaking therefore requires a deep understanding of these intersecting dimensions.

For local and regional actors, adopting a people- and place-based lens means **designing interventions that are responsive to** the specific characteristics of their **territories and communities**. It also means **moving beyond one-size-fits-all solutions** and engaging directly with those who are most affected by change. For instance, vocational training programmes for TCNs in rural areas with ageing populations must address different labour market dynamics than those in metropolitan regions facing housing pressures and high levels of informal employment. By grounding their strategies in territorial realities and social inclusion objectives, regional and local governments can become key drivers of a just transition that benefits both people and the planet.

Local and regional governments occupy a pivotal position in this landscape. They are simultaneously:

- implementers of EU and national climate and energy policies,
- implementers and mediators of labour and social inclusion strategies,
- facilitators of local economic development.

Their proximity to communities allows them to identify needs, mobilise partnerships, and coordinate responses more effectively than national-level administrations. Yet, to

fully harness this potential, local and regional authorities require clear guidance, exchange of experience, and access to practical tools.

The **EMPOWERGEN Guidelines** aim to respond to this need. By translating lessons learned from good practices and POWGEN stakeholder consultations (during POWGEN transnational events) into operational insights, they intend **to support regional and local authorities in designing and managing inclusive green transition initiatives**. They also aim **to enhance cross-regional learning**, encouraging authorities **to adapt and replicate effective models** within their own contexts.

1.4. Structure of the Guidelines

This document firstly introduces the potential user of the guidelines to the general topic by presenting overall challenges posed by a just green transition. Next, the EMPOWERGEN Guidelines give a more detailed presentation of the **EU situation**, including an overview of the main funding instruments available to regional and local governments (**Section 2**).

The following section (**Section 3**) is dedicated to the **methodology** with which these Guidelines have been developed. It presents how data have been gathered and analysed: from desk research of (grey) literature on the green transition, labour market inclusion, and the role of cities and regions (see e.g., Eurocities, 2023; Donoso & Tharaux, 2026), to new data gathered both by POWGEN partners via the POWGEN GP Report and the development of pilot trainings, and lastly by Conference of Peripheral Maritime Regions (CPMR) POWGEN partner – main responsible for the development of this study – through the methods of analysis and the additional good practices selected.

The targeted desk research in **Section 4** offers a synthesis of research on the **effects of the green transition and climate change on European regions**, examined through both a people-based and a place-based perspectives. It highlights how intersectional inequalities shape individuals' exposure to climate risks and access to opportunities arising from the transition. It also examines how territorial disparities affect the capacity of regions to adapt and thrive.

The EMPOWERGEN Guidelines then move on to the analytical sections. **Section 5** focuses on the **practices developed across EU territories to promote the labour market inclusion of TCNs**, with particular attention to the role of regional and local governments. Drawing from both the POWGEN GP Report and CPMR additional research, the Guidelines present 20+ cases that exemplify diverse approaches to fostering inclusive employment in renewable energy and construction. These include initiatives

ranging from targeted apprenticeship schemes and public-private training partnerships to local integration programmes that combine language learning, vocational training, and employment placement. Each case is analysed to identify key success factors, challenges, and conditions for sustainability and transferability.

A comparative analysis follows in **Section 6**, structured as a **SWOT (Strengths, Weaknesses, Opportunities, and Threats) assessment of the practices reviewed**. This exercise allows for a critical examination of what makes certain initiatives sustainable over time, which elements are most transferable to other contexts, and which external conditions, such as funding stability, regulatory frameworks, or local partnerships, are crucial for success.

Section 7 summarises the **main findings of the research** and introduce the **EMPOWERGEN Policy Recommendations** which are then presented in **Section 8**, divided into a more high-level and a concise set of concrete pointers for local and regional actors. These recommendations are designed to be actionable, highlighting feasible steps that can enhance the inclusion of TCNs in construction and renewable energy sectors while contributing to local development and social cohesion. These recommendations also build on insights and solutions shared by stakeholders during the POWGEN transnational events in Barcelona (2025) and Lisbon (2026) and have been validated by EU, regional and local stakeholders themselves. Indeed, these exchanges provided valuable evidence on the ground-level barriers faced by municipalities and regional administrations, employers, counsellors, and CSOs supporting TCNs labour inclusion, as well as on innovative responses that have proven effective. The integration of stakeholder voices, including those of EU representatives, ensures that the EMPOWERGEN Guidelines reflect not only theoretical and policy considerations but also practical experience and lived realities.

Overall, the EMPOWERGEN Guidelines argue **that the green transition is a social transformation as much as an environmental one and that local and regional actors are uniquely placed to lead it from below**. By combining people-based and place-based perspectives, and by actively engaging migrants, especially women, asylum seekers, and refugees, they can turn the transition into a lever for inclusion and resilience. Amid constrained budgets, demographic change, and mounting climate impacts, **POWGEN shows that solutions exist**: born of collaboration, experimentation, and fairness. **These Guidelines build on that evidence to offer regional and local actors a compass for the road ahead**.

2. The EU context

2.1. Competitiveness and the changing priorities of the European green transition

On February 26th, 2025, the European Commission officially launched **the “Clean Industry Deal”** (European Commission, 2025). This policy and funding package **comes 6 years after the launch of the so-called EU “Green Deal”**, admittedly the most ambitious (investment) plan in Western countries to ensure a fast and just transition to a green economy, i.e., “no net emissions of greenhouse gases in 2050 and [...] economic growth is decoupled from resource use” (European Commission, 2019). The EU Green Deal set the goal of making Europe the first climate-neutral continent by 2050, combining decarbonisation, technological innovation, and sustainable economic growth. Initially, the focus was on accelerating renewable energy deployment, energy efficiency, and reducing fossil-fuel dependency⁶.

However, with the inauguration of the new European Commission, the election of Donald Trump in the United States, and the rise of geopolitical tensions (including at the borders of the EU, especially in Ukraine but also, more recently, in Iran), coupled also with the competition with China on, among other, electric vehicles and renewable energy⁷, **industrial competitiveness seems to have become again key**, following also the much debated Draghi Report⁸. In President von der Leyen’s 2024 State of the Union speech, competitiveness was framed as the new guiding priority, necessary to keep EU’s green transition economically sustainable and technologically relevant (European Commission, 2024b). Draghi himself, after one year of the presentation of his report on the future of the EU economy, further reinforced the need for growth: “*without faster*

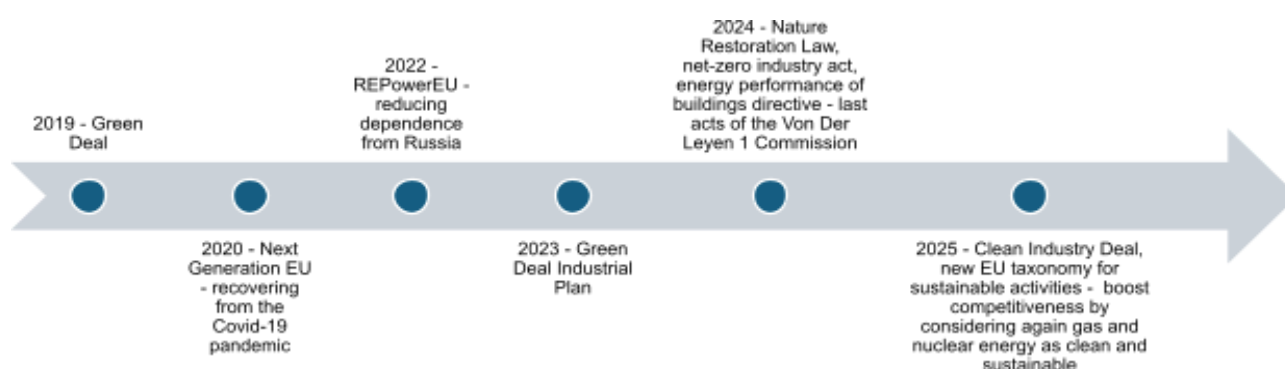
⁶ Please note that nuclear power is a low-carbon alternative to fossil fuels and is considered at the EU level, together with gas, “activities that cannot yet be replaced by technologically and economically feasible low-carbon alternatives, but do contribute to climate change mitigation and with the potential to play a major role in the transition to a climate-neutral economy, in line with EU climate goals and commitments, and subject to strict conditions, without crowding out investment in renewables” (European Commission, 2022b).

⁷ For a thorough discussion on the competition between the EU and China on electric vehicles see: <https://www.boell.de/en/2025/10/31/green-technology-how-european-competitiveness-linked-china> and <https://ecfr.eu/article/green-competitiveness-why-europe-should-rethink-targets-to-outpace-china/>. On EU-China relations on climate change see: <https://www.bruegel.org/newsletter/different-routes-decarbonisation-eu-carbon-pricing-versus-chinas-green-tech>

⁸ Draghi, M. (September, 9 2024), “The Draghi report: A competitiveness strategy for Europe”, available at: https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en

growth, Europe would be unable to deliver on its climate, digital and security ambitions—not to mention finance its ageing societies”⁹. This caused **the shift of the EU strategy (and funding) from a Green to a Clean transition**, “prioritising EU competitiveness and prosperity” while aiming at decarbonisation (European Commission, 2025a; see Table 1). Thus, despite not removing it entirely, the current EU narrative is not primarily about climate ambition, but about the capacity to stay globally competitive and to secure a skilled labour force required to sustain this ambition.

Table 1: Policy and funding focus shift at the EU level – a timeline



Source: author’s own elaboration – data from European Commission website

The consequences of this shift in priorities at the EU level is amounting to **easing the pressure on the European industrial sector** to dismiss or compensate the use of fossil fuels, with environmental groups highlighting the possible negative effects of this turnaround for the climate¹⁰. Indeed, the first act of the Commission to implement the latest industrial roadmap is an Action Plan for Affordable Energy, focusing on lowering the bills of all, including of EU energy-intensive industries, in the short term by, among other actions, ensuring well-functioning fossil fuel (i.e., gas) markets (European Commission, 2025b).

Against these rapidly changing background and priorities at the EU level, **there is still much to do to ensure that the EU can meet the net-zero target by 2050** and to stay on track for the 2030 targets. According to 2024 European Environment Agency (2025) on the General Union Environment Action Programme (EAP) to 2030, the EU is lagging

⁹ See:

https://commission.europa.eu/document/download/0951a4ff-cd1a-4ea3-bc1d-f603deccled9_en?filename=Draghi_Speech_High_Level_Conference_One_Year_After.pdf

¹⁰ See:

<https://www.theguardian.com/environment/2025/jun/26/eu-rollback-on-environmental-policy-deregulation-europea-green-deal>; <https://apnews.com/article/eu-economy-green-industry-reform-89a3b66611523d676f37c3fc966cf948>

behind in the majority of EAP indicators. To bridge this gap, regional and local authorities might become key actors in driving the green transition, leveraging their unique position to implement targeted initiatives and foster inclusive, sustainable growth (European Committee of the Regions, 2024).

2.2. Labour market shortages and skills mismatch in the EU

Labour shortages and skills mismatch have become **one of the most critical barriers to competitiveness and to achieving green transition objectives in the EU** (see Section 3). A clear demographic decline and EU ageing populations exacerbate this trend. The Joint Research Centre of the European Union (JRC) estimates that “a labour force without managed migration of skilled workers from outside the EU will result in the largest drop of 26.7 pp [percentage points], or 55.9 million people by 2070 without increased immigration” (Biagi, Deuster & Natale, 2025)¹¹. Moreover, according to another JRC research (Kuokkanen, 2023), EU companies which already struggle to find workforce, are being challenged by the need to train workers to fill over 1 million new jobs by 2030 to meet the green transition targets, particularly in construction, renewable energy, and overall, in EU net-zero technology manufacturing. Other estimates found that there could be an increase in green jobs between 800,000 and 2.5 million by 2030 (European Commission, 2023).

The **shortage of workers, both in skilled occupations but also in medium- and low-skilled positions**, is particularly evident in construction, retrofitting, installation and maintenance of renewable energy systems (e.g., electricians) (FIEC, 2023; ELA, 2025)¹². In the construction sector the specific challenges that are driving the labour shortages include the ageing of the workforce, a lack of attractiveness and issues related to working conditions (ELA, 2025; Vogel, 2016), which are exacerbated by the effects of climate change (Lloyd’s Register Foundation, 2025). For skilled workers, including those considered to foster the “twin transition” (i.e., the coupling of green and digital transitions) but also renewable energy engineers, environmental engineers and electric and autonomous vehicle specialists, the situation in the EU is still quite daring as talent demand continues to outpace supply, and the EU as a whole does not seem to be able to attract enough talents (OECD, 2025a). As a recent report from the World Economic Forum (2025) highlights, the number of job postings requiring at least one green skill has risen by nearly 22% between 2022 and 2023 globally.

¹¹ For a summary of the JRC report see:

https://joint-research-centre.ec.europa.eu/jrc-news-and-updates/tackling-eus-shrinking-workforce-better-education-more-women-jobs-skilled-migration-2025-06-11_en

¹² See also:

<https://www.eesc.europa.eu/en/news-media/news/eu-needs-competitive-and-resilient-construction-industry>.

[BOX 2] Skills' gaps in the EU retrofitting and construction sectors

To face specifically the skills' challenge in construction, the EU has set out to train more professionals to boost a more sustainable construction sector through the creation of the **New European Bauhaus Academy**¹³, which is deemed to accelerate up-skilling and re-skilling in the construction ecosystem “to support the transition from an extractive, mineral-based and fossil hydrocarbon-fuelled construction economy to a regenerative bio-economy and circular system of material reuse” (European Commission, 2024a; see also: Cedefop & UNESCO-UNEVOC, 2025).

As initially envisaged with the Schengen Agreements of 1997, **EU policies intend to facilitate migration within the EU to mitigate the challenges deriving from labour and skills shortages**. Research by the European Labour Authority (ELA, 2025) highlights that “[f]or 422 of the 430 occupations (98%) that have been classified as in shortage in at least one country, there exists at least one other country that has identified the same occupation as being in surplus”. At the same time, moving talents across EU countries (or more generally from countries of emigration to countries of immigration) fosters the “brain drain” of emigration countries, which is a growing issue in the EU as high-skilled workers from Eastern and Southern member states move to higher-wage Northern economies¹⁴.

Against this background, **TCNs can play a vital role** in providing a young workforce to the EU labour market, **if their integration in the EU labour markets is well managed** and their competences and skills are properly recognised (for a more thorough analysis of the role of TCNs in the EU labour market see **Section 3**). TCNs currently represent 4,4% of the EU workforce, with peaks of participation in countries like Italy, Germany, Spain and France; moreover, TCNs participation increases in occupations that face persistent labour shortages like construction, manufacturing and care (7.1%) (Seiger, 2024). However, they tend to be mainly employed in low-skilled jobs and often overqualified for their positions. This is due to a lack of recognition of skills and certifications as TCNs frequently hold degrees and professional certifications that are not automatically

¹³ See: https://new-european-bauhaus.europa.eu/about/neb-academy_en.

¹⁴ See: <https://www.eunews.it/en/2024/01/04/curbing-the-brain-drain-enrico-letta/>.

recognised in the EU and skills validation procedures in EU countries are fragmented, slow, expensive, and difficult to be harmonised across member states.

This is why POWGEN focuses specifically on the employability of TCNs: not only to meet EU market needs but to ensure that TCNs living and working in EU regions can access real work opportunities, decent working conditions, and can exercise fully their right to build a dignified life in the EU.

[BOX 3] The Heat pump accelerator platform

A particularly interesting EU tool for the POWGEN project is the *Heat pump accelerator platform* funded by REPowerEU, which is a EU multi-stakeholders' platform for the transition towards the use (i.e., "production and deployment") of heat pumps for heating and cooling in the residential sector. One of the main issues highlighted in the platform for the diffusion of heat pumps was and remains the training of skilled installers. According to the EC website "it is estimated that 750,000 more installers are needed and at least 50% of existing installers will have to be reskilled to work with heat pumps"¹⁵.

2.3. EU policies and tools to address skills gaps and shortages

There are **four main instruments to tackle skills gaps and labour shortages** across the EU and its Member States: the *Union of Skills*, the *EU talent pool*, the *introduction of the use of micro-credentials* and the continuation of the *Skills Profile Tool for TCNs*.

In 2025, the European Commission launched the **Union of Skills** initiative (European Commission, 2025c; ERRIN, 2024), a cross-sector platform aiming to coordinate investments in skills development, support partnerships with industry, and develop training aligned with labour market needs. Its objectives include the creation of EU Skills Academies to train workers for green and digital sectors, strengthening reskilling and upskilling of EU citizens, and supporting recognition of skills learned outside formal education. The Union of Skills is in line with the objectives of the EU Pact for Skills (2020), which requires businesses and training providers to commit to concrete training targets.

¹⁵ See: https://energy.ec.europa.eu/topics/energy-efficiency/heat-pumps_en

Another tool developed by the Commission in 2023, is the **EU Talent Pool** (COM(2023) 748 final) which is intended to attract high-skilled TCNs from non-EU countries, allowing EU employers to search a database of vetted candidates, and complement the reform of the EU Blue Card Directive (Directive (EU) 2021/1883). However, the Talent Pool focuses on high-skilled workers, leaving aside mid- and low-skilled workers, despite documented shortages in those segments (Cedefop & UNESCO-UNEVOC, 2025).

According to a recent Implementation Dialogue on “Talent attraction and retention” hosted by the European Commission (December 2025) and focusing specifically on the implementation of these tools focusing on skilled workforce from outside of the EU, **complex, fragmented immigration procedures are the primary obstacle to attracting and retaining talent in the EU**, compounded by inconsistent implementation of EU directives, too many legal pathways, difficulties in recognising qualifications, unfair recruitment risks, integration challenges, and negative narratives around migration. On the positive side, a range of promising practices were shared, including one-stop shops for newcomers, university partnerships to retain graduates, streamlined pathways for innovators, digital tools to match employers with non-EU workers, and upskilling programmes for migrants already living and working in the EU¹⁶.

To tackle the issue of recognition of skills, the Council Recommendation on **microcredentials**¹⁷ for Lifelong Learning and Employability (2022) establishes a European framework for the recognition of short, competency-based training modules. Microcredentials are **particularly relevant for TCNs** because they allow for fast validation of partial competences, reduce barriers to entry into regulated skilled professions, improve employability without full requalification. Although microcredentials are increasingly adopted in education and training, particularly in non-formal and private learning contexts, they may challenge established national systems governing qualifications and credential recognition. However, the main problem facing the adoption of microcredentials is that – despite having a higher labour market relevance compared to traditional qualifications and degrees – they are

¹⁶ See:

https://home-affairs.ec.europa.eu/whats-new/events/implementation-dialogue-talent-attraction-and-retention-2025-12-11_en

¹⁷ A clear and concise definition of microcredentials in Cedefop and UNESCO-UNEVOC (2025, p. 49) practical guide on “Meeting skill needs for the green transition”: “A microcredential is the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes have been assessed against transparent and clearly defined standards. Courses leading to microcredentials are designed to provide the learner with specific knowledge, skills and competences that respond to societal, personal, cultural or labour market needs. Microcredentials are owned by the learner, can be shared and are portable. They may stand alone or combined into larger credentials. They are underpinned by quality assurance following agreed standards in the relevant sector or area of activity.”

not yet systematically integrated in many skills ecosystems across all EU member states and regions (CEDEFOP & UNESCO-UNEVOC, 2025).

Last but not least, among the first tools developed by the European Commission (DG HOME) to tackle the issue of skills and qualifications' recognition is the **EU Skills Profile Tool for TCNs**¹⁸ which is deemed to facilitate the early identification of skills among refugees, migrants, and non-EU citizens residing in the EU, aiding their integration into the labour market. However, this tool is rarely adopted outside of EU funded projects notwithstanding the great improvements introduced over time in terms of user friendliness and flexibility to adapt to different needs.

2.4. EU funding supporting skills, inclusion, and the green transition

Lastly, it is important to underline that several EU funding instruments can be leveraged by regional authorities, municipalities, and training providers to finance labour inclusion and skills development. The table below presents a (non-exhaustive) list of the main EU funding sources available to local and regional governments but also to local and regional actors to support up-skilling and re-skilling of workers, recognition and certification of skills, inclusion of TCNs and vulnerable groups in the EU labour market, and the green transition.

Table 2: EU funding instruments relevant to POWGEN Guidelines

Funding instrument	Relevant priorities	Target beneficiaries
REPowerEU (amendment to Recovery and Resilience Facility / Regulation (EU) 2023/435)	Reduce dependence on Russian fossil fuels, accelerate renewables, support skills needed for renewable infrastructure	Member States; indirect local benefits

¹⁸ See:

https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/skills-jobs/eu-skills-profile-tool-third-country-nationals_en.

Just Transition Fund and Just Transition Mechanism (Regulation (EU) 2021/1056)	Support workers affected by the transition away from fossil fuels; reskilling; regional economic restructuring	Regions undergoing industrial conversion
AMIF – Asylum, Migration and Integration Fund (Regulation (EU) 2021/1147)	Support integration of TCNs through skills recognition, training, labour market access	Local/regional governments, NGOs, service providers
Erasmus+ (Regulation (EU) 2021/817)	Up-skilling, VET partnerships, apprenticeships, mobility of learners and staff	Educational institutions, VET providers, employers
ESF+ – European Social Fund Plus (Regulation (EU) 2021/1057)	Employment, vocational training, inclusion of vulnerable groups	Regions, employment agencies, training providers

Source: author's own elaboration. NB: the LIFE Programme – i.e., EU's funding instrument for the environment and climate action – was not included in this table as it does not fund specifically TCNs labour market inclusion as it is focused mainly on infrastructure. For more info see: LIFE Clean Energy Transition sub-programme¹⁹.

¹⁹ https://cinea.ec.europa.eu/programmes/life/clean-energy-transition_en.

3. Methodology

The EMPOWERGEN Guidelines draw on a **mixed-methods approach**, combining **desk research, stakeholder interviews, a focus group discussion, and a participatory methodology including both peer-reviews and consultation activities to validate policy recommendations**. The data collection process included an in-depth desk review of existing literature, policy documents, and reports related to TCNs in the renewable energy and energy rehabilitation sectors. This review was complemented by interviews and exchanges with key stakeholders, including researchers at Center for Global Development and ODI, practitioners and consortia from other EU projects on TCNs integration and renewable energy, and implementers of good practices selected within the POWGEN project, also drawing on CPMR network of regional authorities (and their local counterparts). These interviews and exchanges provided valuable insights into the practical experiences, challenges, and lessons learned from implementing inclusive green job initiatives.

In addition to the desk research and interviews, a **focus group discussion** was conducted with POWGEN project partners. The focus group served as a platform to discuss and validate findings, exchange perspectives, and identify gaps in the existing set of 10+ practices of labour market inclusion in the renewable energy and energy rehabilitation sectors identified across 6 countries: Austria, Germany, Italy, Portugal, Spain, Switzerland. This collaborative session contributed to the definition of the criteria for the selection of additional good practices, which are presented and analysed in the Guidelines alongside those included in the POWGEN GP report.

The **10+ additional practices** selected have been developed by 6 public and private entities/organisations operating in Sweden, The Netherlands, Slovenia, Spain, and Turkey and were chosen **to complement the examples highlighted in the POWGEN GP report**. The **selection criteria** aimed primarily **to broaden the geographical coverage** of the initiatives, ensuring representation from North-Western and Central-Eastern EU countries plus Switzerland and Türkiye, while also highlighting **diverse approaches to the inclusion of TCNs and women** across various types of green jobs (e.g., photovoltaic and heat pump installers, energy consultants, IT-trained PV mappers). Additional criteria considered the **use of different funding sources** accessible to local and regional governments, as well as the **variety of implementing organisations** involved,

including multi-stakeholder networks such as energy communities and both public and private, for-profit and non-profit actors. The selection process of these additional 10 initiatives overall aimed to showcase a broader range of projects that combine TCNs and women inclusion with investments in various segments of the green economy, such as renewable energy installation, energy-efficient building refurbishment, urban regeneration, and energy community activities.

The combined set of practices, both from the POWGEN GP report and the additional cases identified through this research, forms the basis for an **in-depth SWOT analysis** highlighting challenges and opportunities facing local and regional authorities. This analysis is guided by a comparative lens, underlining cross-cutting themes and actionable insights to support local and regional governments in fostering an inclusive and sustainable green transition.

3.1. EMPOWERGEN Guidelines participatory approach

Both the analysis and the policy recommendations tailored for local and regional governments of the present guidelines are also informed by the feedback gathered at the POWGEN focus group on good practices (2024), CPMR Energy working Group International Event (May 2025), the Barcelona Transnational Learning event of the POWGEN Project (May 2025). A specific methodology was developed in order **to collect feedback from the variety of stakeholders' clusters** who were present at the Barcelona networking event and at the Lisbon event: local and regional institutions, counsellors, CSOs supporting migrants, and employers²⁰. EU level and transnational group stakeholders took instead part in a case study exercise and reflected in groups and collectively on the challenges and potentials for the inclusion of TCNs in the renewables and construction sectors as presented in the EMPOWERGEN Guidelines. The Lisbon Transnational Event in February 2026 further supported the final validation of the Guidelines presented in Section 8²¹. EU level and transnational group stakeholders involved in the project under the "EU Cluster" coordinated by the CPMR partner also

²⁰ The POWGEN project foresaw the innovative deployment of "Local Clusters", an inclusive stakeholder ecosystem where migrant individuals can access training and employment opportunities, thereby promoting social and economic integration. Their mission was to support the implementation of the POWGEN Project by engaging in participatory activities and providing guidance, contacts, and monitoring to enhance the employability of TCNs in the renewable energy and construction sectors. Meanwhile, the "EU Cluster" managed by the CPMR partner included instead relevant EU-level organizations and associations holding a transnational dimension and delivering ad hoc advice during the participatory activities for the upscale and dissemination of POWGEN beyond the local scope of the pilots.

²¹ The specific content findings of such activities are part of sensitive deliverables of the project *D4.1 Local Cluster Progress Report* and *D4.2 Labour Insertion Enterprises Hub Progress Report*. Anonymized results and content have been used as source material for development of the EMPOWERGEN Guidelines.

collaborated by peer-reviewing the final version of this document (see Acknowledgements).

Finally, the task of the project associated to the Guidelines also included **a small-scale pilot replication experience** that the CPMR partner had to lead by seeking to involve an additional member region from the network into replicating the POWGEN methodology. In January 2026, CPMR launched an internal expression of interest for replication which included a small, funded set of activities for a. replicating the training experience of third-country nationals in renewable energy sector with a smaller sample of migrant students, and b. providing further validation and feedback on the EMPOWERGEN guidelines. In February 2026, the process led to the selection of the **Noord Holland Province** in combination with local VET provider **Werkom** for the combination and adaptation of a pre-existing pilot training on renewable energy technologies (e.g. photovoltaic panels) for third-country nationals combined with POWGEN training programme content and a focus on migrant learners. The experience ran throughout Summer 2026 and regular feedback meetings were held with this exceptional replication partner in order to enrich the content of the guidelines proposed in this study. You can refer to all stakeholder contributions from the participatory methodologies in Section 6.2 of this study.

4. Territorial and individual challenges of the green transition for the EU labour markets

The European Union's transition to a green economy presents **a variety of challenges**, especially when considering the need to ensure that the transition(s) is (are) *just*. Among the challenges there is the **increasing demand for both high- and low-skilled workforce in green jobs**, which implies the need to include foreign workforce and women to counterbalance the aging and shrinking European active population, and the **need to reskill and upskill the European workforce** to meet the new demands of the green economy (Vandeplas et al., 2022; OECD, 2023; CEDEFOP, 2024; European Commission, 2025; see also POWGEN GP Report). These labour market challenges in the green sector are exacerbated by **a decade-long trend in structural problems of the EU labour market**, which is experiencing historically low unemployment rates alongside record-high job vacancies (ELA and EURES, 2024; ODI, 2024). The European Commission (2023b) has expressed concern that, without decisive intervention, these shortages could hinder the green and digital transitions.

A 2022 *Special Eurobarometer* revealed that 38% of respondents felt they lacked the necessary skills to support the green transition, underscoring the urgency for comprehensive training initiatives. Without targeted educational reforms, and without available active workforce, the EU could face a significant shortfall of workforce in green sectors by 2030 (European Commission, 2023d). In response, the EU has implemented several funding mechanisms to support national and local governments in this endeavour. The *Green Deal Industrial Plan* (now replaced by the *Clean Industrial Deal*) aimed to accelerate Europe's clean tech industries' path to net-zero emissions by investing in training, upskilling, and reskilling programs. Moreover, the *Recovery Plan for Europe* (i.e., Next Generation EU – 2021-2026, launched in response to the Covid-19 pandemic) focuses particularly on fighting climate change, with 30% of the EU funds devoted to the cause, the highest share ever of the European budget.

To meet the growing demand for skilled and (mostly) low-skilled labour in sectors such as refurbishment, construction, and the installation of solar panels and heat pumps, the EU recognizes the importance of involving TCNs and provides member states with specific, although somewhat limited, tools and funding (see **Sections 2.3 and 2.4**). By

investing in training programs and embracing the contributions of TCNs, the EU aims to support member states and build a workforce capable of driving and sustaining the green transition (Council of the European Union, 2022; European Commission, 2022) (see Section 2 above).

4.1. A place-based approach to the effects of green transition on regions

When it comes to **the green transition** it is also crucial to highlight that this concept is **not a place nor a people-neutral concept**; indeed, **transitioning to a green economy has uneven impacts across Europe on numerous levels**.

At a **territorial level** different regions might experience different effects in terms of job losses (or gains): when it comes to local employment structures, some regions might rely more or less on *brown jobs* – i.e., in highly polluting activities (Vandeplas et al., 2022). For instance, in Romania's Gorj County and Asturias in Spain (both coal-mining areas), the phase-out of coal has led to efforts to reskill workers for renewable energy jobs or in tourism. Despite this, many miners are hesitant to transition due to the difficulties in starting anew²², especially considering that green jobs are often more skills-intensive compared to brown jobs (Vandeplas et al., 2022). However, Vandeplas et al. also note that the job loss in coal mining activities has been counterbalanced for the most part by national declining unemployment trends: “[e]specially in countries such as Poland and the Czechia, the strong decline in unemployment is likely to have cushioned the labour market impact of the reduction of employment in coal mining” (2022: 18).

One important consideration about the effects on the job market of the green transition is **how to define “green jobs”** in order to determine which skills profiles are and will be increasingly necessary by 2050, something that has been attempted by Vandeplas et al. (2022) and Seiger (2024) but which is still under consideration at the EU level, according to feedback collected during the POWGEN partners’ focus group on good practices held in 2025.

²² See AP article (2024) for Gorj County <https://apnews.com/article/coal-energy-transition-romania-715c79d312dc62bf5a5ef0d68e32d6fd> and The Times article (2025) for Asturias <https://www.thetimes.com/world/europe/article/asturias-miners-tourism-renewable-energy-spain-36ztgjsc3?utm>

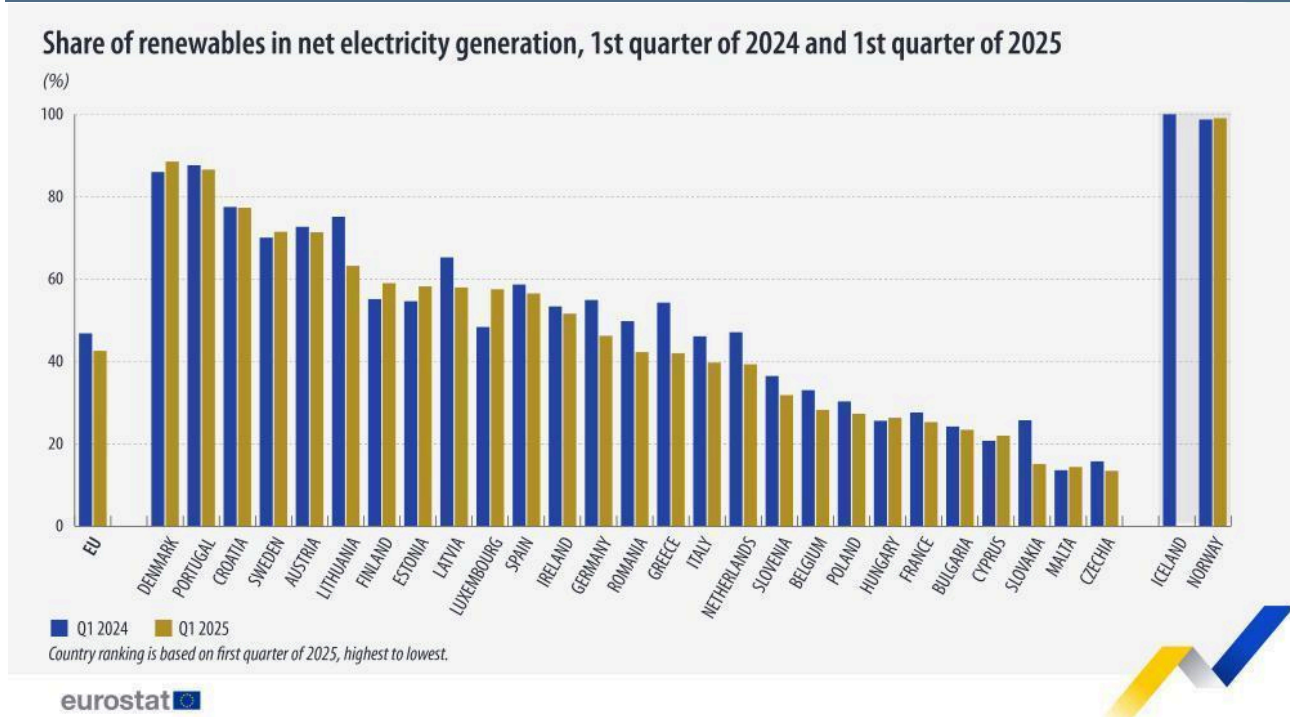
[BOX 4] Defining green jobs

Seiger (2024) has attempted at listing 13 occupations – using International Standard Classification of Occupations (ISCO) definitions – which have “at least a 0.1 (or 10%) concentration of environmental-related activities” calculated on the basis of the occupational greenness score (Gilli et al., 2020; Vona, 2021), namely: refuse workers, life science technicians and related associate professionals; manufacturing labourers; building frame and related trades workers; sales, marketing and development managers; engineering professionals (excluding electrotechnology); manufacturing, mining, construction and distribution managers; sales and purchasing agents and brokers, physical and earth science professionals, electrotechnology engineers, life science professionals; retail and wholesale trade managers; physical and engineering science technicians. Aptly, the POWGEN pilots tested training curricula specific for PV and heat pumps installers that could be used to define EU level curricula for this specific type of green jobs.

An additional territorial aspect is related to **the ability to reduce dependency on fossil fuel and switch to renewable energies**, something that has been **significantly impacted by** the reduced availability and the spike in prices of gas and oil following **the Ukraine invasion in 2022**, and something that will likely continue to have a strong impact following the US-Israel attacks to Iran and the ensuing **strait of Hormuz crisis**. While it is clear that some European countries, like Denmark and Portugal are already almost fully powered (around 90%) by clean energy (see Figure 1), Central-Eastern and most Southern European countries still rely heavily on fossil fuels, while countries like The Netherlands, after a strong commitment to switch to renewables, are currently focusing on nuclear energy²³.

²³ The ESPON/Interreg project “Putting Clean Energy Transition Policies into Practice in Central Europe” (CleanEnergy4CE) provides regional data (for Central European regions only) and trends on the share of renewable energy in final energy consumption which could be useful to assess which regions are finding it harder or easier to make the switch, instead of relying on national data only. Similar projects could expand the (trans)regional knowledge of data on the green transition to ensure more informed policy-making at the regional and local levels. Available at: <https://www.espon.eu/publications/cleanenergy4ce-putting-clean-energy-transition-policies-practice-central-europe>.

FIGURE 1. Country disparities: reliance on renewables



Source: Eurostat 2025. Available at:

<https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20250619-2>

Another clear territorial cleavage which could amount to disparities in transitioning to a green economy is **the urban vs. rural divide**. Rural areas might be more resistant to the transition compared to urban areas, considering **the different needs in terms of**, for instance, **infrastructure retrofitting** (e.g., isolated houses in rural areas vs. urban buildings) **and service availability** (e.g., public transport might not be an available alternative for people living in rural areas and commuting even for green jobs) (European Commission, 2023c). Moreover, the European Committee of the Regions (2023) highlighted that smaller urban areas struggle with **financial constraints and limited institutional capacities** which could in turn potentially hinder their ability to participate in the green transition.

On the other hand, research (see Schwab, 2023) points to the fact that **the energy transition might have also positive outcomes for rural areas**, especially considering the potential for these areas to (auto-)produce solar, wind and/or hydro-power and to stop relying on often hard to get and expensive fossil fuel (used e.g., for heating), but also for the creation of new high-quality green jobs.

4.2. A people-based (and intersectional) approach to the effects of the green transition on individuals

At the individual level, it is paramount to recognise that **the green transition can have different impacts depending on intersectional issues** faced by different individuals, i.e., it is not people neutral.

Focusing on the labour market effects of the transition, in a scenario of shrinking and aging workforce, it is crucial to ensure **a higher participation of youth**, but most importantly – in terms of numbers – **of women and TCNs in the green jobs market**. As a consequence, gender disparities play an important role, as evidenced also in the POWGEN GP report (2025: 10–12). It is important to stress again here that **renewable energy and construction sectors are mostly male-dominated** and therefore, in order to promote a wider participation in these sectors, it is paramount **to protect women and queer communities from harassment and discrimination** on the job (EIGE, 2023). European Institute for Gender Equality (EIGE) also stresses (2023, p. 97) that: “The energy sector, including its subsectors, is highly gender-segregated horizontally and vertically. Apart from being underrepresented in the energy workforce in both conventional and renewable energy technologies, women are also less present in higher-skilled technical, engineering, operative and leadership positions”; this further hinders women participation in these sectors.

Issues related to **citizenship status and/or migratory background** also need to be carefully taken into consideration when aiming to include (and attract) more TCNs in green transition sectors. The transition's effects are not evenly distributed across the workforce: emerging high-skilled and high-quality green jobs are foreseen to be mainly open to EU nationals, while the **more traditional low-skilled and migrant-intensive jobs** (e.g., in construction/retrofitting) **will remain mostly available to TCNs**. So, while these sectors demand new competences and reskilling, persistent barriers to recognising qualifications obtained in non-EU countries risk rendering TCN workers' existing skills invisible, limiting their upward mobility even as their sectors evolve. At the same time, many of the physically demanding roles in which TCNs are overrepresented involve greater exposure to harsh climate conditions, meaning that the green transition may simultaneously reshape the content of these jobs while failing to improve – or even worsening – the working conditions of those who perform them. Taken together, these dynamics point to a compounding of disadvantages along the lines of both occupational segmentation and migration status, underscoring the need for an intersectional approach that addresses qualification recognition, job quality and

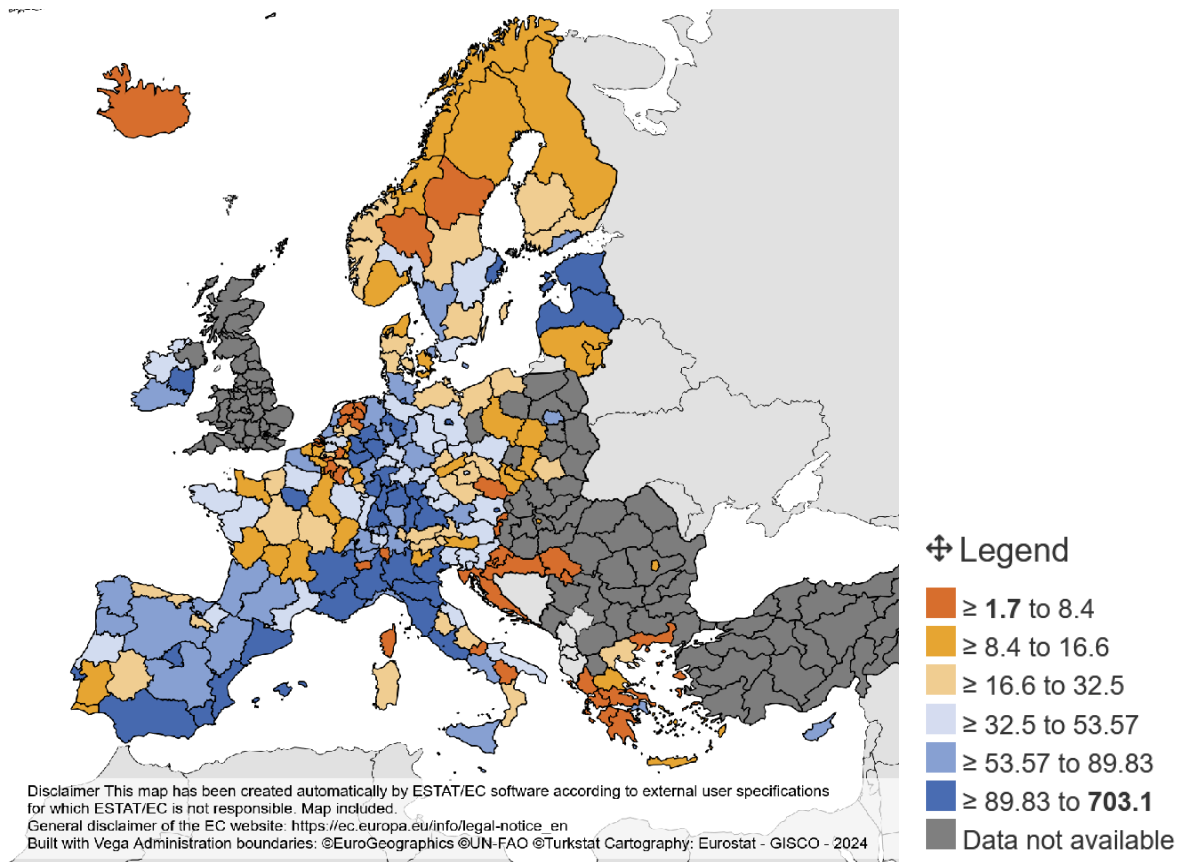
occupational health as interconnected dimensions of an inclusive green transition (EU-OSHA, 2013; European Commission, 2025a).

Moreover, one of the effects of the green transition is **the reduction of pollution**, which has not only a different impact on different regions, but most importantly on specific categories of people, such as young and old people whose health is most affected by air quality. At the same time, **young adults** might benefit from the green transition also **in terms of new “green” career opportunities**, while older adults may face financial challenges or being left out of the labour market due to the reduction of jobs in “brown” sectors (Lazzarini & Lucia, 2024).

4.3. Labour market inclusion of TCNs and disadvantaged groups and the role of regional and local governments

Currently, **Germany, Spain, Italy and France, but also Ireland, Estonia and Latvia have the highest share of TCNs in absolute numbers** in their labour force (see Figure 2) but **(national) immigration policies** remain key to match the needs of the EU labour market, including the green jobs market (Huckstep and Dempster, 2024). **Yet, labour market inclusion of TCNs is a subnational level issue**. This is true not only because the labour market is very specific territory-wise – as every region/locality has a specific economic vocation, specific job-matching services, and even specific job descriptions/qualifications and related job trainings – but also because integration is a local issue that depends heavily on local actors and multi-stakeholder networks (see OECD, 2018; De Coninck and Solano, 2023; Coletti and Pasini, 2023).

FIGURE 2. TCNs (15–64 yo) in the labour force in NUTS 2 EU regions (2023 data)



Source: author's selection of data; map generated from Eurostat with ESTAT/EC visualisation software

In addition, **TCNs with different migratory backgrounds might experience different barriers to labour market integration.** Whereas it is clear from research (and common sense) that the main barrier to access the EU labour market for TCNs is the **language barrier** (see Table 3), it is important to notice that, although being a minority numerically compared to TCNs who reach the EU to work, **asylum seekers and refugees** – who become part of the EU workforce usually after no more than 6 months after applying for asylum²⁴ – **face additional barriers compared to labour migrants.** Notably, they often **lack pre-existing social networks** of friends and family, which can facilitate job access. While such networks may perpetuate labour market segmentation – i.e., where specific nationalities dominate certain job sectors – and might hinder the improvement of work conditions for co-nationals, they nonetheless provide initial employment opportunities (Perino and Eve, 2017; Fasani et al., 2022). Moreover, asylum

²⁴ Directive (EU) 2024/1346 of the European Parliament and of the Council of 14 May 2024 laying down standards for the reception of applicants for international protection.

seekers and refugees frequently endure **mental health issues** deriving not only from traumatic past experiences but also from the experiences of protracted inactivity and isolation from the local EU communities due to prolonged permanence in (often big and isolated) reception centres.

Table 3: Main barriers in accessing the EU labour markets for TCNs and examples of tested/recommended solutions from EU-funded projects

BARRIERS	SOLUTIONS
Language knowledge	Language-specific trainings
Poor knowledge and understanding of EU labour markets	Orientation sessions performed by trade unions, employment agencies, civil society organisations supporting TCNs labour market inclusion
Difficulty in recognising skills and qualifications – resulting in lack of skills but also overqualification of TCNs	Develop European qualification and competency standards ²⁵
Lack of efficient skills' matching tools at EU level	Multi-stakeholder engagement: public and private actors should come together to support the skills' recognition and matching processes ²⁶
Employer's bias leading to discrimination in hiring (especially in high-skilled jobs, while in low skilled positions the high demand of workers offsets the bias effect)	Diversity & inclusion programmes

²⁵ European Economic and Social Committee (2025). Factual and legislative analysis for an effective integration of third country nationals (TCNs) in the EU labour market. Opinion C/2025/764
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C_202500764

²⁶ See INTERREG funded projects Labour-INT 1, 2, 3.

Bureaucratic hurdles hindering hiring	Targeted support for hiring companies from employers' associations and civil society organisations supporting TCNs labour market inclusion
Lack of recognition of skills and qualifications	Skills Union, Skills Profile Tool for TCNs, European Passport Supplements, micro-credentials
Precarity of legal residence status has an impact employment status and vice-versa (issues related to citizenship or residence permit)	Temporary protection directive for Ukrainian citizens fleeing the war has been deemed as having a positive impact on their swift labour market integration ²⁷
Barriers to mobility linked to legal residence status	Solutions envisaged only for highly skilled TCNs (EU Blue Card)

Sources: European Website on Integration, OECD (2018), Federico & Baglioni (2021), Eurostat (2021).

Overall, in the past decade, **the focus on labour market integration of TCNs has shifted in terms of target group** (from asylum seekers and refugees to “essential” work migrants) **and of the territorial level of decision-making – from local to national to EU levels and back.**

Even though refugees remain a small component of EU labour market²⁸, **EU funding has mostly focused (although mostly from 2015 to 2020) on this target group** to facilitate integration in the labour market, **but without specific concern for upskilling refugees for the green economy.** A burgeoning amount of “best” and “good” practices of integration have been stored in a dedicated EU website, namely the Migrant Integration

²⁷ See EMN and OECD, 2024 available at:

https://www.oecd.org/content/dam/oecd/en/topics/policy-issues/migration/OECD-EMN%20Inform_%20Labour-market-integration-of-beneficiaries-of-temporary-protection-from-Ukraine.pdf

²⁸ Numbers of asylum seekers and refugees remain limited compared to TCNs that legally reside and work in the EU. For instance, in Italy TCNs are around 3.5 million, with more than 1.5 million TCNs employed (above 5% of the total employed population in Italy). On the other hand, asylum seekers and international protection holders account for a little more than half a million people – excluding temporary protection (2023 data, Centro Astalli).

Hub (formerly known as European Website on Integration)²⁹, mainly highlighting the crucial role of local integration with the support of multi-stakeholder and multi-level networks.

From 2020 onwards, the Covid-19 pandemic has pushed initially the EU and member states to focus on “essential” **TCN workers** especially in the agriculture and care sector, while also uncovering soon after the end of the lockdown the need for TCN workers in other sectors including **construction**. The latter has been heavily subsidised through the “Next Generation EU” Recovery, Transformation and Resilience framework funds for the retrofitting of both public and private infrastructure, especially in South and Central Eastern European countries and regions. As a consequence, there has been an **increasing need to experiment new pathways and trainings** – again mainly at the local level, where experimentation usually takes place – for both underused and new labour force (i.e., women and TCNs). The catalogue of practices of POWGEN GP Report, complemented with the practices presented in these Guidelines, is a clear example of this trend.

Among the main lessons learned of this very intense decade of policies and practices experimentation related to TCNs’ integration in the EU labour market, there is a clearly emerging trend of local and regional authorities to mainstream services for TCNs in order to offer universal services (or one-stop-shops) that adapt to a variety of targets (see Section 5).

One final, general consideration on barriers to TCNs’ labour market inclusion in many industry sectors (also including RE) is that **mobility is not foreseen for TCNs, not across EU countries nor across regions** (see Job Tracks; OECD, 2025). Despite not having a direct competence on these matters, **local and regional authorities should still advocate for greater attention on the subject by national and EU authorities**. Indeed, shortages in labour market supply and the specific need for workers in the green energy sector require a higher level of flexibility and potential for mobility within EU countries and regions for TCNs. An interesting study recently released by the OECD (2025b) analyses the barriers and potential solutions for mobility and integrated labour markets for TCNs in the Greater Copenhagen Area, comprising both the Denmark and Sweden sides of the bridge. The main legislative and administrative barriers to cross-border labour mobility for third-country nationals (TCNs) include: residence and work permit issued in one country do not give access to work permit elsewhere. Potential solutions to these include digital ID, common taxation and social security

²⁹ [Migrant integration hub – European Commission](#)

rules. However, it is acknowledged that these would still mainly apply for high-skilled TCNs and that their implementation seems however difficult in the current geopolitical context.

Altogether, **substantial shifts are necessary in order to ensure a just and green transition between sectors, firms, occupations, and regions** (see Vandeplas et al., 2022; European Commission, 2025). This requires proactive national but also regional and local policies to address the challenges and harness the potential of the transition and to ensure that specific local needs are considered. Moreover, there is still the need at EU, national, and regional levels to have a clear definition of the necessary skills, qualifications and certifications that are necessary for the new green jobs, while public funding seem to be wavering in favour of security spending due to changing strategies at EU and national levels, and private “sustainable” investments can still be directed at supporting certain gas and nuclear activities (European Commission, 2022b; 2025b).

5. When practices are good: main challenges and lessons learned for regional and local governments

This section presents and analyses **10 good practices identified by the POWGEN GP report** and 10 additional initiatives selected by the CPMR partner in the project, focusing on the labour market inclusion of TCNs in renewable energy (RE) and construction sectors across **8 EU countries plus Switzerland and Turkey**³⁰.

The aim of this section is to identify transferable lessons and structural challenges emerging from these initiatives, in order to provide food for thought for regional and local policymakers designing future projects or policy measures in these fields.

Taken together, these initiatives reflect a growing recognition that the green and digital transitions offer opportunities to advance both economic resilience and social inclusion. Yet they also illustrate the complexity of integrating TCNs into labour markets that are often segmented, male-dominated, undergoing rapid technological and regulatory change and are subject to funding volatility.

³⁰ Note that projects are described in past tense if they have already ended. Additionally, whenever the report delves into a GP from mostly a country not previously analysed by POWGEN (i.e. not in the GP report), a short paragraph provides some further national context to better inform the reader.

5.1. POWGEN Good Practices Report: lessons learned and key challenges

AUSTRIA	
→ Project: WOMEN4GREEN	
Project	<u>WOMEN4GREEN</u>³¹ – women in power for a green economy (2021–2024) was an EU Erasmus+ funded project with partners in Austria, Italy, and Turkey, mainly implemented in Austria. The target group was young women (14–20 years old) who wish to pursue a career in the green sector. The project aimed to provide guidance for young women in the still uncertain and male-dominated world of green jobs and encourage women participation to the green transition by partnering with local job centres.
Lessons learned and <i>challenges</i> for local and regional authorities:	• Involvement of local public employment centres and career orientation centres is key to bridge gaps and provide <u>guidance for job seekers and employers</u> in the green sector, especially considering the <u>need to raise awareness on sustainability and gender-equality</u> in green jobs • Engagement with young people (including those who are still in education), especially <u>women</u>, who are often <u>left behind, especially in the energy sector</u> • Need for <u>ongoing funding and sustainability strategies</u> to ensure continuity in training and counselling
Specific to the RE and construction sectors:	• Creation of potentially replicable guidelines and training material (e.g., catalogue of green jobs and skills, guide for career counselling services and for companies working in the green sector, teaching curriculum) could help tackle the <u>uncertainty surrounding the definition and scope of green jobs and skills</u> and support the definition of training modules and profiles/certifications that are in high demand at the local level.

³¹ <https://women4green.eu/>

FRANCE



Project: ACHIEVE

Project

ACHIEVE – Actions in low-income Households to Improve energy efficiency through Visits and Energy diagnosis (2011-2014)³² was one of the oldest EU funded projects foreseeing the need for energy advisors for low-income and disadvantaged households. Actions were carried out in France, UK, Bulgaria, Slovenia, and Germany. Partnerships at the local level included social and health services for the referral of low-income (later defined in a situation of fuel/energy poverty) households and non-profit organisations.

Lessons learned and *challenges* for local and regional authorities:

- **Local networks between public (i.e., social/health services) and non-profit organisations** are key to implement the project but *creating and maintaining these networks is time consuming and must be done regularly*
- **Vulnerable groups support each other**, but *TCNs inclusion is possible only if they belong to the same language community of the host society* (see also Energy Advising Centres -EACs - in Spain below)
- *Households who receive welfare benefits might avoid participating in the project out of fear of losing their benefits after the visits of energy advisors (fear of being controlled)* so all acquired data should be used solely for project purposes

Specific to the RE and construction sectors:

- Knowledge is key to mitigate the effects of energy poverty; **energy consultants who understand the challenges of low-income households are best placed to support them** in saving energy
- Although *training energy advisors is expensive*, the predecessor of ACHIEVE (i.e., Cariteam Energy Saving Service) has proved that **the project not only reduced the energy spending of targeted families, but also overall reduced the energy costs of the city** where it was implemented (i.e., Frankfurt)

³² https://powerpoor.eu/sites/default/files/2020-12/achieve_guidelines_en.pdf

GERMANY



Project: MUMS@WORK

Project

Mums@work³³ – enhancing social integration and employability of migrant mothers (2021-2023) was an EU Asylum Migration and Integration Fund (AMIF) funded project with partners in Germany, Spain, Cyprus, Italy, France, and Belgium. The main target group is **mothers with a migratory background and at risk of social exclusion (aged 25-45) who receive personalised support** (i.e., counselling, orientation, training) to access the labour market.

Lessons learned and *challenges* for local and regional authorities:

- **Personalised support over time and beyond project duration** is key to ensure success, so there is the need to find stable funding/resources to include personalised support in local career centres
- Accessible childcare is key to foster **women participation** to the labour market
- **Engaging local employers** to provide real job opportunities and facilitate job matching

Specific to the RE and construction sectors:

- N/A

³³ <https://abd.org/en/programs/mumswork/>

GERMANY



Project: SOLAR BAU 24

Project

Solar Bau 24³⁴ – with the sun into the future is a company **founded in 2023 by a young (former) asylum seeker** in Marburg, Germany, which still **provides solar energy and heat pump solutions to local households**. The company **promotes the training and employment of mainly young people** with migratory background and refugees in an inclusive work environment and addresses the growing local demand for skilled workers in the PV (and heat pump) installation sector.

Lessons learned and challenges for local and regional authorities:

- Local **private investment** needs to be mobilised to kickstart socially engaged (and refugee-led) companies
- Local **institutional support** for socially engaged (and refugee-led) companies is essential to overcome bureaucratic and legal hurdles, and to navigate local-level rules and regulations
- **Personalised support** is essential with employees with a diverse background, but it is challenging for employers to maintain high levels of commitment to it while scaling up the business, thus leading to a need for scalable systems and processes for diversity management

Specific to the RE and construction sectors:

- Support the training of workforce in the photovoltaic and heat pump installation to meet the workforce demand of the local economy (Marburg, Germany), **including people with different skills' levels and a diverse cultural background** in the green jobs labour market

³⁴ <https://www.solarbau24.de/>

ITALY



Project: JOINT PROTOCOL BETWEEN THE ITALIAN GOVERNMENT AND THE BUILDING SECTOR

Project

Joint Protocol between the Italian government and the building sector (2022-2025) – funded by the Italian government through PNRR (National Recovery and Resilience – Next Generation EU) funds. It promoted the training and potential employment (i.e., through internships) of 3000 asylum seekers and refugees hosted in reception centres while addressing the high demand for workforce in the construction sectors that has been heavily subsidised in Italy (as elsewhere in the EU) by EU funding to support the refurbishment and retrofitting of buildings while also supporting the recovery after the Covid-19 pandemic.

Lessons learned and *challenges* for local and regional authorities:

- **Multi-level and multi-stakeholder partnership promoted by the national level but implemented at the local level** by municipalities and prefectures for the public sector, third sector organisations managing asylum seekers' reception, and construction employers for the private sector
- Initiatives in both the reception system and training opportunities *rely on national-level public funding*
- **Asylum seekers and refugees can be part of the solution of the workforce crisis** although *total trainee numbers remain limited due to the impossibility to ensure a stable residence permit for asylum seekers and the inefficient interaction between the reception system and the labour market.*

Specific to the RE and construction sectors:

- The *EU and national investments* in the construction sector, particularly to retrofit buildings, *were significantly cut in 2024* and the effects will be more evident from 2025 onwards

PORTUGAL



Project: STEAMigPOWER

Project

STEAMigPOWER³⁵ – **STEAM approaches at higher education for Migrants, refugees and asylum seekers'** emPOWERment (2022–2026) is an EU Erasmus+ funded project with partners in Portugal, Italy, Spain, Greece, Turkey, and Cyprus. The project develops and delivers **STEAM courses focused on Environment and Fight against Climate Change but also EU Civic Integration and Digital Storytelling**. The courses are both on-site and available online on a dedicated learning platform and are targeted specifically at migrants, refugees and asylum seekers, with a special focus on women and students in high school (15–18 year old).

Lessons learned and challenges for local and regional authorities:

- **Offering appealing STEM-related courses to women and young people with a migratory background** might in the medium/long term support the activation of additional workforce in sectors that face significant shortages, although the outcomes are not immediately visible especially at the local level
- Opportunity to be training the trainers and accessing the online platform in other localities is dependent on availability of funding

Specific to the RE and construction sectors:

- **Raising awareness in young people on climate change** issues is key to addressing not only labour shortages but also to have more informed and aware citizens in the future

³⁵ <https://steamigpower.eng.uminho.pt/>

SPAIN



Project: ENERGY ADVISING CENTERS (EACS)

Project

Energy Advising Centers (EACS) (2017 – 2027) is an initiative funded by the Barcelona City Council and currently integrated as part of the social services available for people in a situation of long-term unemployment in Barcelona. The initiative aims at **training (2 weeks of training plus 10 weeks of internship) the target group to become energy advisors** and, over time, it increasingly involved **women in their 50s, including women with a migratory background** with a good knowledge of the language.

Lessons learned and challenges for local and regional authorities:

- Training energy advisors among the long-term unemployed and especially women with a migratory background has a multiplier effect since the **beneficiaries include also the local (energy) poor households that will receive advice**
- A specific investment and commitment has to be made by the local government to ensure the incorporation of the training and of the Energy Advising Centres among the municipality's available (social) services

Specific to the RE and construction sectors:

- **Raise awareness among the local disadvantaged households** on the advantages of the green transition **while mitigating the adverse effects of the fluctuations in energy prices**

SPAIN



Project: IDÀRIA

Project

Idària³⁶ – Associated **Work and Labor Insertion Cooperative** is a non-profit cooperative established in 2013 and operating in Catalonia. Originally, its target group was mainly women working in the informal economy in rural areas who were then inserted in the forestry sector. Over time, it has developed a **specific focus on green energy and specific on solar panel installation and maintenance** (commercial and residential), currently training and employing local people, including those with a migratory background.

Lessons learned and challenges for local and regional authorities:

- **Local cooperatives can be valuable allies** in providing commercial services while also striving for sustainable social outcomes that have a direct impact at the local/regional level
- **Local cooperatives are responsive** to both the evolving demands of the (job) market, ensuring financial sustainability, and the shifting social needs of their communities
- Support and engagement from local governments, along with strong connections to other local third sector organizations, are essential for the survival and effectiveness of social cooperatives

Specific to the RE and construction sectors:

- Notwithstanding the specific focus of the cooperative on the labour market integration of women, to include this target group in solar panel installation and maintenance remains challenging as this remains a male-dominated sector.
- The former also implies often unsafe working environment for women, leading to the need to enforce specific anti-harassment and zero-tolerance policies on sexist behaviours in the construction sector.

³⁶ <https://www.idaria.org/>

SPAIN



Project: SOLAR GENERATION

Project

Solar Generation (2023-2024) was a project funded by the Orange Solidarity Awards (category Climate Change) and promoted by non-profit United Way Spain in collaboration with a photovoltaic company, a training institute, IT companies and a municipality in the Madrid area. The project aimed to train specifically women (16 years old +) in the installation of solar panels without a specific focus on women with a migratory background.

Lessons learned and challenges for local and regional authorities:

- **Local cooperatives can be valuable allies** in providing creating and sustaining a local partnership like this one is key to mobilise local resources and design effective projects but it is costly and difficult to replicate due to the uniqueness of each locality
- Notwithstanding the specific focus of the project on women, the majority of them dropped out of the training due to family duties
- Training programmes have to foresee the need for participants to either be compensated or be able to work while in training

Specific to the RE and construction sectors:

- Transportation of trainees to the location of training/solar power installation is essential to the success of the training especially in non-urban areas

SWITZERLAND



Project: REFUGEES GO SOLAR

Project	<u>Refugees go Solar</u>³⁷ (2020–2024) was a project promoted by the Swiss non-profit <i>Solafrica</i> and funded through various public Swiss grants. It focused on the labour market integration of refugees (and later opened also to unemployed people in cooperation with local social services) in the PV installation sector. It foresaw training and the acquisition of a certification, coupled with work opportunities (i.e., internships), thanks to the partnership with a training organisation and PV installation companies.
Lessons learned and <i>challenges</i> for local and regional authorities:	• Multi-stakeholder partnerships and strong institutional support are crucial to scale up similar projects • <u>Basic knowledge of the local language</u> is key for labour market integration of people with a migratory background
Specific to the RE and construction sectors:	• A certification might provide the standards required at the regional and national levels for the new professions in the PV sector and can be developed in cooperation with local non-profit and training organisations • The development of a specific curriculum including formal and non-formal education could help streamline the needs of disadvantaged groups and people with migratory backgrounds in trainings in the RE sector • <u>Local companies</u> working in the solar energy sector <u>need support to understand how to deal with diversity, including cultural diversity of workforce background</u>.

³⁷ <https://solafrica.ch/refugees-go-solar-solafrica/>

5.2. Additional practices researched for this report

SWEDEN

Context

Sweden is among the most advanced countries in the EU (and the world) in terms of independence from fossil fuels and aims to achieve climate neutrality by 2045 (European Parliamentary Research Service, 2024). Sweden enterprises are leading the green transition in the EU (and providing solutions for other companies and countries to switch to renewables)³⁸ thanks to both public and private investments and policies with a long-term vision (European Investment Bank, 2025).

Practices

Organisation: *DOING GOOD* – previously named *Sätt färg på Göteborg* (Let's Colour Gothenburg), is a non-profit association based in West Sweden.

PROJECT 1	PROJECT 2
<u>Project 1:</u> Work On Environment • <i>Target group:</i> youth and young adults far from the labour market, with a large percentage of immigrants participating, plus school dropouts on high school level • <i>Where:</i> cities of Helsingborg and Gothenburg • <i>When:</i> 2020–2023 • <i>Funding:</i> financed by the Swedish Heritage Foundation (0.5 M EUR)	<u>Project 2:</u> ClimaUrbanAbility – Climate actions for urban and building sustainability³⁹ • <i>Target group:</i> adult students, construction workers, low-skilled adults, migrants and NEETs (Not in Education, Employment, or Training) in craftsmanship schools • <i>Where:</i> Province of Bologna (Italy), Poland • <i>When:</i> January 2024 – June 2025

³⁸ <https://www.iea.org/news/iea-report-highlights-sweden-s-opportunity-to-lead-on-the-clean-energy-transition>

³⁹ See: <https://www.doing-good.se/projekt/climate-actions-for-urban-and-building-sustainability/>.

- *Partnerships*: cities of Helsingborg and Gothenburg

- *Funding*: financed by Erasmus+ (high chances of getting more funding)
- *Partnerships*: Istituto Istruzione Professionale Lavoratori Edili della Provincia di Bologna (IIPLE), Selena Group

This project focused on **building a database of roofs suitable for cool roofing, green roofing, and solar panels**. A search tool and guidelines for using Google Maps were developed, allowing participants **to collect extensive data without requiring proficiency in Swedish or English**. Participants were compensated hourly.

The project also included **vocational training in cool roofing for participants** aged 18 and above. Chalmers University of Technology has nowadays enhanced the initiative by integrating digital twins and machine learning to expand the database and provide valuable insights for cities, real estate owners, contractors, and consultants. To date, over 100,000 roofs have been registered across Europe and North America. The organization leading the project is now a partner in a major EU Horizon PED (*Positive Energy Districts*) initiative to further its reach and impact.

This project aimed at **fostering awareness on the cool roofing technology** in the EU for urban areas, including with paint, and developed methods and formal validations for vocational training of craftsmen in the field of cool roofing. Project partners, in cooperation with Selena Group based in Poland, have also developed an **environmentally friendly coating**, which reaches the highest Swedish standards including in avoiding hazards for the installers.

Among the main outcomes of this project there are the organisation of a conference on cool roofing to raise awareness and support the exchange of good practices, and the design (and testing) of a **curriculum/training plan for the roofing sector on cooling technology** to be tested by the vocational training partner, IIPLE.

Complementarity with other POWGEN selected initiatives: geographical scope (North European country); new type of jobs in the green economy (i.e., supporting the identification of new surfaces for retrofitting and solar panels installation and craftsmanship in the field of cool roofing); use of IT skills; specific focus on youth; partnerships with multiple actors both public and private connecting Research and Development on new technologies with training facilities.

Sustainability and transferability:

- *Work on environment:* the project has developed a search tool and guidelines for using Google Maps a database of roofs suitable for cool roofing, green roofing, and solar panels which can be transferred and used by other projects.
- *ClimaUrbanAbility:* raising awareness and supporting the exchange of good practices on cool roofing and the design of a training plan for the roofing sector are outcomes with strong learning potential that can be used in other countries across the EU.

Lessons learned and challenges for local and regional authorities:

- *Work on environment:* **NEET youth** with gaming skills (not in education nor employment) **emerged as the most effective contributors**; the project is particularly inclusive as **participants do not need proficiency in host country languages**; the **job is flexible and remunerated hourly**, which are two crucial characteristics for young people (including students) and TCNs (including with care responsibilities); *funding remains crucial to enlarge the geographical scope of the project* and that is why the promoting organisation has already found new funding opportunities through EU funds.
- *ClimaUrbanAbility:* **partnership with vocational training centres and R&D partners** is particularly interesting. It connects the industry with the potential employees not through an already available demand and offer job market but by **foreseeing solutions for climate change and thus creating new jobs and a new job market**. It is also useful to foster exchanges between Northern, Eastern and Southern European countries (i.e., Sweden, Poland and Italy

Organisation: City of Malmö

PROJECT: Job Tracks

- *Target group:* newly arrived immigrants, people in long-term unemployment, and those who are inactive (far from the labour market)
- *Where:* City of Malmö – but jobs can be available anywhere in Sweden or Denmark
- *When:* 2018 – ongoing in 2025
- *Funding:* Swedish government
- *Partnerships:* Swedish Employment Office (national office, based in Malmö), Municipality of Malmö

Job Tracks is a programme implemented by several Swedish municipalities to support the labour-market inclusion of newly arrived immigrants, including refugees. It was launched following a 2017 government decision encouraging **closer collaboration between municipalities and the Public Employment Service**, accompanied by dedicated funding. Municipalities with Job Tracks initiatives offer training and labour market access in different job positions.

The City of Malmö has taken a particularly active role by developing targeted training pathways for groups in vulnerable situations, including **a curriculum for photovoltaic (PV) solar panel installation** that ensured access to the labour market to successful trained candidates in 9 months (maximum) since the beginning of the training. Through coordinated efforts with local, national, and cross-border (including Danish) employers, trained refugees and unemployed residents have accessed stable employment. This increased labour-market participation has contributed to a reduction in social assistance expenditure in Malmö⁴⁰.

⁴⁰ See: <https://www.csmonitor.com/World/Europe/2025/1020/immigration-muslim-europe-denmark-sweden>.

Complementarity with other POWGEN selected initiatives: geographical scope (North European country); strong cooperation between local and national levels; high level of efficiency and success of the initiative.

Sustainability and transferability:

- Training curricula developed locally are then translated to the national level and remain available to all job centres of the country
- Connecting work demand and offer to ensure sustainability of (and interest in) the trainings offered by the municipal services

Lessons learned and *challenges* for local and regional authorities:

- **Strong cooperation with employers** and with the national level is key (multi-level and multi-actor network)
- **Short training and secure employment opportunities** are key to ensuring that TCNs and people in vulnerable situations can participate successfully in the training
- **Cooperation between levels of government is strong due to personal engagement of people involved in the implementation** of the project but this means that *less personal engagement might not ensure the same level of cooperation* and thus the same success for the implementation of the project, as happened in other municipalities in Sweden
- *A sharp decrease in demand for trained workers in solar panels installation since 2024, due to less public attention and investment in renewables, resulted in the halting of the trainings in solar panels' installation*
- *No mobility opportunities for TCNs across neighbouring countries (i.e., Denmark)*

THE NETHERLANDS

Context

The Netherlands illustrates how shifting priorities across successive governments and coalitions can affect the conditions on which the renewable energy sector and its businesses depend. Following the European Green Deal, ambitious green-energy targets exposed a labour shortfall: meeting the Dutch goal of cutting carbon emissions by 55% by 2030 was estimated to require around 28,000 additional technical jobs, while the construction sector faced a demand of around 50,000 workers between 2024 and 2027, with more than half of vacancies for solar panel installers and electrical engineers reported as difficult to fill (ELA, 2024). This gap coincided with a growing number of refugees, providing an opening for social enterprises such as The Switch to emerge (see Practices below). The policy environment, however, has been changeable. The four-party coalition that took office in July 2024 shifted emphasis towards nuclear energy and energy independence, phasing out solar panel incentives and net-metering and reversing mandatory heat-pump and energy-label requirements⁴¹. Priorities may shift again following the October 2025 elections and the formation of a new government. For businesses operating in the sector, it is this recurring change in priorities, rather than any single government's stance, that has affected the viability of enterprises like The Switch.

Practices

Organisation: The Switch⁴² (now retired from business)

PROJECT: The Switch

- *Target group:* refugees and asylum seekers
- *Where:* The Netherlands and Germany
- *When:* until the mid/end of 2024
- *Funding:* private company

⁴¹ See:

<https://www.rabobank.com/knowledge/d011429496-a-new-dutch-coalition-what-are-the-policy-plans-assessing-the-economic-impact>

⁴² <https://www.jointheswitch.nl/>

- *Partnerships*: Empowers⁴³ (since 2021, providers of training materials for the Switch Academy)

The Switch was **a private company** with a social mission that, until the end of 2024, **installed solar panels, heat pumps, and other sustainable energy systems** for homes and businesses, **primarily employing and training refugees and asylum seekers**. To prepare its workforce, the company established the Switch Academy, which offered free, comprehensive training in rooftop solar installation, electrical work, and heat pump maintenance. Upon completing the program, participants could enter a three-month apprenticeship, after which they were offered employment with fair wages and pension benefits. The company closed towards the end of 2024, citing “ongoing uncertainty in the solar panel sector.” (from The Switch landing webpage⁴⁴).

Complementarity with other POWGEN selected initiatives: geographical scope (Central European country); business initiative.

Sustainability and transferability:

- N/A

Lessons learned and challenges for local and regional authorities:

- The main lesson (and challenge) is that *shifting priorities at the national and EU governments can completely dismantle successful private companies or create bubbles in which some companies thrive.*

⁴³ See: <https://empowers.enstall.com/projects/the-switch/>

⁴⁴ See: <https://www.jointheswitch.nl/>

SLOVENIA ⁴⁵

Context

Slovenia has set a legally binding target of climate neutrality by 2045, following the adoption of its Climate Act in June 2025, which moved the deadline forward from 2050 (European Parliamentary Research Service, 2025). The EU's Recovery and Resilience Facility has provided substantial financial support, with Slovenia's modified plan allocating 49% of its €2.1 billion envelope to climate-related measures, covering renewable energy, building renovation, sustainable mobility and the circular economy (European Commission, 2025d). At the implementation level, local and regional energy agencies play an important bridging role between national strategies and municipal action, and well-structured national aid schemes alongside EU funding enable local-level initiatives⁴⁶. More broadly, the country faces persistent structural challenges: a low share of renewables in the energy mix (reaching almost 25% of renewable energy share in gross final consumption), public opposition to wind energy, and slow progress in scaling up local energy innovations (CCPI, 2026a). On the labour market side, Slovenia faces chronic shortages across construction trades, including bricklayers, carpenters, roofers, electricians and engineers, which are among the occupational groups with the highest occurrence of shortage occupations nationally (EURES, 2025). With low unemployment and a shrinking domestic working-age population, foreign citizens already represent around 16% of people in employment in Slovenia, and roughly half of all workers in the construction sector, and their number continues to increase (Statistical Office of the Republic of Slovenia, 2024; 2025), underscoring the growing relevance of third-country nationals in sustaining both the construction sector and the broader green transition.

Slovenia has implemented and is still implementing several EU funded projects in collaboration with other Central, Eastern and Southern European countries since 2020. Below are three projects implemented by the same organisation with a strong commitment in the RE sector.

⁴⁵ in partnership with other EU countries

⁴⁶ See final report (April 2025) ESPON project CleanEnergy4CE:

https://www.espon.eu/sites/default/files/2025-07/cleanenergy4ce_final_report.pdf

Practices

Organisation: *Focus – Society for Sustainable Development* is an independent, non-governmental and non-profit environmental organization operating in the field of climate change.

PROJECT 1: RENOVERTY	PROJECT 2: SOCIALNRG	PROJECT 3: GENDER4POWER
<u>Project 1: RENOVERTY</u>⁴⁷ – Home Renovation Roadmaps to Address Energy Poverty in Vulnerable Rural Districts • <i>Target group:</i> energy poor households selected by social services who own or co-own an apartment/house • <i>Where:</i> pilots in Sveta Nedelja (Croatia), Tartu (Estonia), Bükk-Mak & Somlő-Marcalmamente-Ba konyalja Leader (Hungary), Zasavje (Slovenia), Parma (Italy), Coimbra (Portugal), and Osona (Spain) • <i>When:</i> November 2022 – October 2025	<u>Project 2: SOCIALNRG</u>⁴⁹ • <i>Target group:</i> 460 families in social housing (low-income residents) • <i>Where:</i> Ravne na Koroškem, Slovenia; Mechelen, Belgium; Cinisello Balsamo, Italy • <i>When:</i> 10/2024 – 09/2027 • <i>Funding:</i> Programme for the Environment and Climate Action – LIFE (almost 2 M EUR) • <i>Partnerships:</i> social and cooperative housing providers and academia	<u>Project 3:</u> GENDER4POWER – Generating Equity, Nurturing Diversity, Energising Resilience 4 Power Against Energy Poverty⁵⁰ • <i>Target group:</i> people affected by energy poverty, with a special focus on women • <i>Where:</i> Austria, Germany, Greece, Lithuania, Slovenia and Spain • <i>When:</i> November 2024 – October 2028 • <i>Funding:</i> Programme for the Environment and Climate Action –

⁴⁷ See: <https://ieecp.org/projects/renoverty/>

⁴⁹ See: <https://www.housingeurope.eu/project/socialnrg/>.

⁵⁰ See:

<https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE23-CET-GENDER4Power-101167565/generating-equity-nurturing-diversity-energising-resilience-4-power-against-energy-poverty>.

• <i>Funding:</i> Programme for the Environment and Climate Action – LIFE⁴⁸ • <i>Partnerships:</i> strong involvement of local social services and municipalities for the selection and contact with households		LIFE (almost 2 M EUR) • <i>Partnerships:</i> different stakeholders in Slovenia, Lithuania, Austria, Greece, Spain and Germany
RENOVERTY supported energy-efficiency upgrades in energy-poor households across Central, Eastern, South-Eastern, and Southern Europe. The project has developed a methodological and practical framework for creating renovation roadmaps for vulnerable rural districts, with a focus on financial feasibility and social fairness. It provided tools and resources to help households take on rural home renovations as well as local and regional actors to design and implement single- or multi-household renovation plans, while also developing a scalable model to enable replication across the EU.	SOCIALNRG aims to create lasting energy communities for 460 families across three social housing pilot sites in Slovenia, Italy, and Belgium. In Mechelen (Belgium), a feasibility study explores geothermal heating for both social and private housing to cut residents' energy costs. In Ravne na Koroškem (Slovenia), renovations and shared solar installations aim to improve comfort and reduce costs through tenant involvement. Meanwhile, in Cinisello Balsamo (Italy), housing cooperative Unabita is adopting solar power, with tenant engagement to involve households in energy management.	GENDER4POWER seeks to improve living conditions and energy efficiency for households experiencing energy poverty through a gender-responsive, people-centred, and multi-stakeholder approach. The project operates across six pilot sites, where it implements renovation measures, energy-efficiency improvements, and co-develops renewable energy solutions and tests them with citizens to improve their living conditions. Capacity-building activities support citizen involvement and cooperation

⁴⁸ See: <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/life2027>.

A core objective was to reduce the logistical, financial, administrative, and legal challenges associated with complex, multi-stakeholder home-renovation processes. The project also emphasised the social dimension of retrofits by integrating considerations such as safety, comfort, and accessibility to improve living conditions for people in vulnerable situations⁵¹.	The methodology combines participatory co-design, peer exchange across sites, and identification of policy barriers to energy communities. The project's objectives are to adapt community energy models to social, cooperative, and public housing through locally tailored, co-created solutions via Local Advisory Boards	among local actors. GENDER4POWER also develops policy recommendations for national and EU levels to help scale effective practices.
<u>Complementarity with other POWGEN selected initiatives:</u> geographical scope Central and Eastern Europe (CEE) – all 3 projects; TCNs are not a specific target group but people in vulnerable situations especially in rural and peri-urban areas (RENOVERTY) and low-income households facing energy poverty (SOCIALNRG, GENDER4POWER); labour-market integration not facilitated but focus on how to retrofit residential buildings also in rural and peri-urban areas (RENOVERTY) and focus on energy communities (SOCIALNRG), thus presenting models for the co-creation of local place-based solutions; people-based, gender approach to selected energy poverty solutions, grounded in the needs and experiences of local citizens (Gender4Power).		
<u>Sustainability and transferability:</u> • RENOVERTY equips local and regional actors with tools, including renovation roadmaps⁵², and training resources⁵³ to develop and carry out renovation		

⁵¹ New Rural Renovation Roadmaps by RENOVERTY Guide Homeowners towards Sustainable Futures – IEECP (<https://ieecp.org/2025/02/28/new-rural-renovation-roadmaps-in-7-eu-countries-guide-homeowners-towards-sustainable-futures/>).

⁵² See: <https://ieecp.org/2025/10/31/rural-home-renovation-simplified-renoverty-releases-its-updated-roadmaps/>.

⁵³ See: <https://renoverty.aisforacademy.eu/login/index.php>.

plans for households and it also produces a scalable model to support wider replication across the EU;

- SOCIALNRG ensures the sustainability of the project by creating local/regional multi-level (local and regional) and multi-stakeholder (local and regional authorities, social services, and anti-poverty organisations) fora i.e., Local Advisory Boards that monitor project activities and outcomes but also foster ongoing coordination;
- GENDER4POWER aims to pilot replicable citizen-driven renewable energy and renovation solutions to improve conditions for energy-poor households and to develop and, based on these experiences, share practical, gender-responsive recommendations for the local, regional and EU levels.

Lessons learned and *challenges* for local and regional authorities:

- *RENOVERTY: households in rural areas need a different approach to retrofitting compared to urban areas particularly as rural areas face a different set of financial, awareness, geographic, and regulatory barriers in comparison to their urban counterpart;*
- SOCIALNRG: instead of focusing on (short term) one-size-fits all financial reliefs or social tariffs adopted by EU member states, the project aims to mobilise the local level and its most vulnerable households through the **co-creation of place-based solutions to energy poverty**, including by reimagining the concept of **vulnerability and turning it into expertise in energy poverty**, thus envisaging a **people-centred approach**.

SPAIN

Context

The EU's Recovery and Resilience Facility has been a major lever in the process of decarbonisation, targeting climate neutrality by 2050 and a 100% renewable electricity system, with Spain's modified plan directing €67 billion (40% of its total allocation) to climate objectives, including renewables, building rehabilitation, and sustainable mobility⁵⁴. Spain's decentralised governance model, built around 17 Autonomous Communities, enables regional adaptation of energy and climate policies, and Just Transition Agreements now cover 197 municipalities across eight regions (Lázaro Touza et al., 2025). However, this multilevel structure also produces uneven implementation, with significant variation in renewable deployment and institutional capacity across regions and growing social opposition to large-scale renewables projects in some territories (CCPI, 2025b). The role of migrant workers is key, particularly in the construction sector which faces persistent labour shortages and an ageing workforce; the arrival of foreign workers since 2022 has begun to ease these constraints (Lores & Garcia, 2025), while the regularisation plan implemented in 2026 is set to further benefit the workforce demand in key sectors. Migrants accounted for 13.5% of Spain's workforce and filled 40% of new jobs in 2024, including in construction and emerging green sectors.

Practices

Organisation: Basque Country Regional Government

PROJECT 1	PROJECT 2: EKIOLA
Project 1: Training, employment, guidance and accompaniment programs for social and labour market inclusion linked to urban	Project 2: EKIOLA - Energy community Citizens' involvement <i>Target group:</i> rural communities and municipalities

⁵⁴ See:

https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/spains-recovery-and-resilience-plan_en.

regeneration projects in the Basque Country • <i>Target group:</i> job seekers, with priority given to people receiving the Minimum Living Income or long-term job seekers (including TCNs) • <i>Where:</i> degraded and vulnerable neighbourhoods of 12 cities and towns in the Basque Country • <i>When:</i> 2023-2024 • <i>Funding:</i> Next Generation EU – Recovery, Transformation and Resilience framework funds (around 4.5 M EUR) • <i>Partnerships:</i> Basque Government, with the collaboration of Lanbide (Basque Employment Service), town councils and local development agencies of the 12 localities, namely Sestao, Leaburu, San Sebastian-Donostia, Mondragon, Bilbao, Vitoria-Gasteiz, Bermeo, Irun, Errenteria, Eibar, Soraluze and Elgoibar	• <i>Where:</i> Basque Country • <i>When:</i> 2021-2024 • <i>Funding:</i> INTERREG, federal state, Basque Government • <i>Partnerships:</i> municipalities and local stakeholders/residents creating the energy communities (EC), agreements with financial entities for access to credit for residents with advantageous conditions
The 13 programs focus on reskilling, employability, and social and labour inclusion of unemployed individuals (ideally 50% women) while rehabilitating the residential building stock of degraded and vulnerable neighborhoods, improving energy efficiency and supporting climate adaptation through measures such as nature-based solutions, sustainable	EKIOLA was created by the Basque Energy Agency (EVE) and KREAN to support the development of local energy communities and strengthen public acceptance of renewable energy. While each EKIOLA project adapted to regional circumstances, the setup process was broadly similar: local and regional actors (always including the municipality) agreed on

drainage, and neighbourhood-scale energy installations. Each program has three phases: training (2 months), alternance training contract (10 months of 65% work and 35% training, with at least 75% of the total gross salary) and hiring, accompanied by personalized guidance also above the 12 months of the program. By the end of most programs, 174 participants were trained and hired by public entities, including 46 (26.4%) TCNs. Most projects were concluded in October 2024, after which participants continued their job search with guidance support.	roles and responsibilities. Municipal involvement was generally indirect, for example by running information offices or facilitating grid connections. EKIOLA promoted sustainable, consumer-centred energy models in which citizens become both producers and users of local renewable electricity. New solar PV plants have been installed in or near urban areas, generating Km0 energy for community members, with participation also open to local authorities and businesses. Each household purchased only the number of panels needed to fully cover its electricity consumption, fostering responsible, locally based energy production and use.
<u>Complementarity with other POWGEN selected initiatives:</u> The training programs are a source of funding Next Generation EU, with specific focus on urban regeneration “as a tool for inclusive and sustainable recovery”; EKIOLA focuses on energy communities as a tool to empower and raise awareness among citizens	
<u>Sustainability and transferability:</u> • Training programs: combining EU funds for urban regeneration and energy efficiency (including residential buildings’ retrofitting) to train and hire TCNs and unemployed people in the construction and retrofitting sector • EKIOLA: promoting the creation of self-sufficient energy communities; mitigating adverse effects of the green transition (e.g., energy prices fluctuations); include small towns in the green transition (minimum 400 inhabitants)	

Lessons learned and *challenges* for local and regional authorities:

- **Coordinating role of the Basque Country** for both practices proves to be essential (OECD, 2025c), which is also a challenge in itself
- **Short, paid trainings with secure employment prospects and personalised guidance also after hiring** foster participation to trainings by unemployed individuals with dependants (i.e., 2 months training, 10 months **alternance training contract** – 65% work and 35% training, with at least 75% of the total gross salary)
- *Very small towns might be difficult to engage* as they would not see the benefits of establishing an energy community (minimum 400 participants)
- **“Renewable Energy Communities will be a key part of the energy transition,** as recognised in the EU Energy Framework but much still needs to be done to boost their uptake”⁵⁵

⁵⁵ See: <https://www.interregeurope.eu/good-practices/ekiola-energy-community-citizens-involvement>

EXTRA EU - TURKEY

Context

At the time of the implementation of the project (2020), **Turkey hosted around 3.5 million Syrians under Temporary Protection**, the largest refugee population globally. Over 96% of Syrians live within host communities, with almost half of them concentrated in four Southeastern provinces, where competition for services and jobs has increasingly strained social cohesion. Meanwhile, renewable energy is one of Türkiye's fastest-growing sectors, offering major potential for sustainable economic development. Jobs in installation, operation, and maintenance can stimulate local economies and create decent work for both refugees and host communities.

Practices

Organisation: United Nations Development Programme (UNDP)

Project: Increasing employability for Syrian refugees and Turkish host communities in the renewable energy sector⁵⁶

- *Target group:* initially 500 beneficiaries extended to 1875 beneficiaries aged 18 and over among Syrians under temporary protection and local community members
- *Where:* initially five provinces (Konya, Bursa, Tekirdağ, Kocaeli and Mersin); then extended to cover selected participants living in 10 cities: Istanbul, Konya, Kocaeli, Bursa, İzmir, Gaziantep, Şanlıurfa, Mardin, Hatay, and Mersin
- *When:* January 2020 – December 2025
- *Funding:* Government of the Republic of Korea (3,27 million US dollars)
- *Partnerships:* Turkish Ministry of National Education Directorate General of Life-Long Learning in cooperation with UNDP

⁵⁶ See:

https://open.undp.org/projects/00125243?_gl=1*155czgp*_ga*MzQ4NjEwNjQzLjE3NjExMjE3MzA.*_ga_PBF14M9C6G*czE3NjMzMDQ3MDMkbzUkZzAkDE3NjMzMDQ3MDMkajYwJGwwwJGgw.

The project started in 2020 to improve the employability of about 500 Syrians and local community members in the renewable energy sector through **vocational training and certification in solar and wind energy**. The project aimed at promoting awareness of green job opportunities and ensuring training and certification for participants. The project expanded significantly and evolved over the course of 5 years and built **a network of public, private, and civil-society actors in the renewable energy sector** to identify skills needs and create new economic opportunities for Syrians and host community members. Throughout the years, clear indicators were established to monitor and evaluate the impact of the project, including a specific indicator on trainees which established that at least 25% of participants had to be women.

Vocational trainings on Photovoltaic solar panel installation and hybrid (Solar-Wind) system integration targeted low-skilled and semi-skilled workers. The training programme, initially a 247-hour face-to-face course launched in March 2021 for 500 trainees across five provinces (Bursa, Kocaeli, Konya, Hatay, Mersin), expanded in 2022 to Istanbul with a target of additional 1000 participants, and went up to 1875 individuals who received internationally recognized Europass Certificate Supplement⁵⁷ (in Turkish and English). At that point, it shifted to a blended model combining online and in-person learning. In the blended format, 103 hours of theory were converted into digital modules that trainees complete before and after classroom sessions, improving digital literacy and allowing in-person time to focus on discussion and practical work. Overall, 128 courses were conducted using a blended learning model. As the first blended-learning programme among the 2750 courses run by the Turkish Ministry of National Education Directorate General of Lifelong Learning, it is expected to serve as a model for future training initiatives. An employment analysis study, launched March 2024, interviewed a sample of over 1000 training participants and found that almost half of them started working in the renewable energy sector while only 54 graduates were directly employed in renewable energy companies and 13 started their own renewable energy business; the rest joined the general labour market.

Complementarity with other POWGEN selected initiatives: focus on extra-EU regions; scale of the project (500 beneficiaries) and clear example of direct implementation of inclusion measures for TCNs (in this case, refugees) in the RE sector.

⁵⁷ See: <https://europass.europa.eu/en/learn-europe/certificate-supplement>.

Sustainability and transferability:

- Project was funded by the Republic of Korea which extended funding first to accommodate for the Covid-19 crisis and kept funding the project until 2025 due to its success:
- Defining and monitoring **clear indicators for impact evaluation** is key to win funders' trust and continuous financial support while ensuring **transparency and visibility of results** is key to foster mutual learning with other similar projects

Lessons learned and challenges for local and regional authorities:

- **Mainstreaming** – i.e., involving in the project both TCNs and the local community – ensures that the **benefits** of the trainings are shared by **people living in the same territory** and that **people with different backgrounds learn and potentially work together**
- **Blended learning** can help **reach out to more learners even in remote areas**, without losing the practical, in person part which can be carried out in the closest main municipality
- The **European Certificate Supplement** is a tool specific to training delivered in EU and associated countries and can facilitate migration of trained workers
- The interaction between the local/regional level and the national/international levels is worth of note. This project was possible only thanks to the involvement of national and international level institutions and thus was designed at the national level but local level institutions and services still played a key role in the implementation phase; **the involvement of the national level government facilitated the extension of the initiative to additional provinces/municipalities and the creation of training curricula that can now be used at the national level.**

6. Analysing practices: which potential for sustainability and transferability?

The previous section has evidenced that across the EU a wide range of local and transnational projects have emerged to facilitate labour market integration of TCNs, women and vulnerable groups in RE and construction sectors. These projects, funded through mechanisms such as AMIF, ESF+, Erasmus+, and Just Transition funds, combine training, mentoring, and social inclusion approaches.

This section examines the strengths, weaknesses, opportunities, and threats (SWOT) of such initiatives, drawing on selected lessons learned and challenges and reflecting in particular on the potential for sustainability and transferability of the practices analysed, situating them within the EU's broader policy context on skills, integration, and green employment.

6.1. SWOT analysis: Strengths and Opportunities vs. Weaknesses and Threats of practices analysed

The SWOT analysis presented below is a powerful tool to highlight the main challenges and lessons learned from the practices analysed in Section 5 above. SWOT has four main dimensions: strengths and weaknesses are internal factors, while opportunities and threats describe external factors. **Strengths** refer to the resources, capabilities, or advantages that give a project a competitive edge, while **weaknesses** are internal limitations or gaps that hinder performance of said projects. **Opportunities** are favourable conditions in the environment that could be leveraged for growth or improvement, while **threats** are external challenges or risks that could negatively affect outcomes (Helms & Nixon, 2010). Taken together, these four elements help us provide a structured overview of both the internal situation and the external context of the projects analysed and to stress what are the gaps and lessons learned that regional and local authorities could draw from when implementing new projects on the inclusion of TCNs in the RE and construction sectors.

STRENGTHS

- Inclusiveness and mainstreaming: One of the major strengths of the projects and initiatives analysed is their **inclusive approach**, which treats **TCNs as part of broader categories of vulnerable jobseekers rather than as a separate target group**. Programmes such as *Achieve* and *Mums@Work* illustrate how labour market integration can be embedded in wider social reintegration strategies. For example, *Achieve* supports the long-term unemployed by training them as energy advisors to help households facing energy poverty; while *Mums@Work* focuses on women at risk of social exclusion, including migrants, offering tailored training and employment pathways.
- Peer-support and mutual empowerment: Several initiatives, such as *ACHIEVE*, (but also *REACH*, and the *Energy Advice Café* presented in the POWGEN GP Report), illustrate how **peer-support mechanisms can generate mutual benefits by training the long-term unemployed (including TCNs) to provide energy-efficiency advice to low-income households**. These projects foster a **“win-win” model of inclusion**: participants gain employment and self-confidence while supporting vulnerable communities.
- Multilevel local & regional partnerships plus high institutional connectivity: Another key strength lies in the territorial embeddedness of these projects in terms of local stakeholder network and trust relations with the local community. *Women4Green* and *SocialNRG*, for example, have successfully mobilised local job centres, municipalities, and businesses to co-design solutions and tackle bureaucratic barriers. Local job centres play a crucial role as intermediaries, assisting with residence permits, recognition of qualifications, and administrative procedures that can otherwise exclude migrants from training opportunities.
- Short, accessible, and targeted training programmes: Projects such as *Solar Generation* (3-month programme), *Job Tracks* (6 months), and regional initiatives in the Basque Country (2+10 months structure) **demonstrate the effectiveness of short, modular training formats**. These models lower entry barriers for participants, particularly those balancing work, childcare, or language learning.
- Place-based and people-centred methodologies (participatory): Finally, good practices such as *SOCIALNRG* and *GENDER4Power* exemplify place-based and

participatory approaches, **tailoring training to local labour market needs while ensuring participants have a voice in programme design**. These approaches reflect principles outlined in the OECD's (2023) Framework for Local Employment and Economic Development, which recognises co-creation and community involvement as drivers of sustainable labour market inclusion.

WEAKNESSES

- Gender imbalances and exclusionary work environments: Despite progress, **the renewable energy and construction sectors remain heavily male-dominated**. Initiatives such as *Refugees Go Solar* and *Idària* confirm that photovoltaic installation and related jobs are still perceived as a “male profession”. This structural imbalance limits the participation of women, particularly TCN women, who already face multiple barriers such as language, care responsibilities, and discrimination. Furthermore, **harsh working conditions, exacerbated by climate change** (e.g., outdoor work under extreme heat), compound these challenges.
- Language and communication barriers: Projects such as *ACHIEVE* have shown that **certain green jobs**, particularly those involving interaction with clients (e.g., energy advisors), **require good command of the host-country language and strong communication skills**. This can exclude otherwise qualified participants and highlights the need to integrate language learning with vocational training, a recommendation long made by the OECD (2018) in its work on integration pathways.
- Fragile survival of social enterprises and their partnerships with the public: The **survival of social enterprises in this sector has proved difficult**. Some enterprises report challenges in maintaining cooperation with other social actors once initial enthusiasm wanes or when companies face labour market pressures. This underlines the **structural need for institutionalised public–private partnerships rather than ad-hoc collaborations tied to project cycles**. Moreover, *SolarBau24* and *The Switch* projects stressed the importance of **continuous employer engagement and mentorship with TCNs** (and especially refugees) employed, which does not leave enough time and resources, as businesses expand, to maintaining personalised support for trainees. Moreover, these companies are heavily subject to the changing regulation and funding at national and EU levels.
- Logistical and socioeconomic barriers: Practical barriers such as **transportation and housing persist**, as reported by *Mums@Work*. Without stable housing or

affordable **commuting options**, even well-designed training programmes risk excluding participants. This reflects findings from the European Training Foundation (ETF, 2023), which identifies “basic needs security” as a prerequisite for successful vocational inclusion.

- Limited scale and fragmentation of training offers: While numerous trainings and digital tools have been developed, such as STEAMigPOWER’s experimental game, Solar Generation’s e-learning modules, Women4Green’s podcasts, the **overall scale remains limited**. Moreover, the **multiplication of small-scale initiatives without coordination** risks duplication of effort and inefficient resource use. A more coherent framework co-developed with industry stakeholders, could enhance visibility, transferability, and quality assurance.

OPPORTUNITIES

- Green jobs as a driver of rural revitalisation: Projects like RENOVERTY demonstrate that the **green transition can revitalise rural and depopulating regions** by creating local employment opportunities in building renovation, energy efficiency, and maintenance. The European Commission’s Long-Term Vision for Rural Areas (2021) explicitly calls for **linking green jobs and territorial cohesion** to counteract rural depopulation. In this context, training TCNs and other unemployed residents for local green jobs can have a dual impact: strengthening inclusion and supporting regional development.
- Potential to build multi-stakeholder and multi-level networks: Multi-level partnerships, such as those seen in Achieve and Italy’s Joint Protocol, show **the potential of networked governance models**. Involving regional authorities, employment agencies, training institutions, and businesses ensures both **policy coherence and local relevance**. This reflects EU recommendations under the Pact for Skills (2020), which promotes large-scale partnerships across industrial ecosystems to coordinate skills supply and demand.
- High employability of trained workers: From the analysis of practices, participants completing training programmes often **transitioned quickly into employment** (e.g. UNDP practice in Turkey). This provides an opportunity to showcase inclusion as a solution to labour shortages, not merely a social policy goal. Such evidence can support advocacy for mainstreaming TCN inclusion into industrial and

competitiveness policies, as called for in the EU Skills and Talent Mobility Package (2023).

- [Transnational potential and “brain gain”](#): An underexplored opportunity lies in **promoting circular migration and skills transfer**. Trained TCNs who return to their countries of origin can contribute to developing their own renewable energy sectors, creating a brain gain effect. This aligns with the IOM’s (2022) approach to skills mobility partnerships, encouraging skills circulation rather than permanent migration.
- [Digitalisation and knowledge dissemination](#): Projects like STEAMigPOWER, Solar Generation, and Women4Green have experimented with **digital teaching materials, online courses, and podcasts**. These resources **can be scaled up to reach wider audiences**, especially youth and women, at relatively low cost. The European Digital Education Action Plan (2021–2027) emphasises such open-access models, suggesting EU-level support for the aggregation and dissemination of green skills content across platforms.
- [Advancing gender equality through renewable energy](#): While the construction sector remains male-dominated, **renewable energy offers greater entry potential for women, particularly in technical and managerial roles** (e.g., project management, energy auditing, community outreach). Initiatives like Solar Generation illustrate how targeted recruitment and mentoring can help women, including migrant women, enter these growing fields. This is consistent with EIGE’s (2023) call to use the green transition as a lever to advance gender equality and challenge occupational segregation.

THREATS

- [Policy volatility and shrinking green job markets](#): A major external threat stems from the **instability of national policy frameworks governing green investments**. For example, the Italian government’s decision in 2024 to cut funding for energy efficiency incentives in construction, previously a major employment driver, but also the effects on businesses like the Dutch “The Switch”, demonstrate how national policy shifts can abruptly reduce job opportunities. On a similar yet distinct note, in Italy, the decision to change the rules of reception and integration services for asylum seekers had a strong negative impact on an otherwise very successful

project: the Joint Protocol between the Italian government and the building sector. **Such volatility discourages both companies and training providers from long-term commitments.** The OECD (2024) warns that **inconsistent policy signals undermine the predictability needed for workforce planning in green industries.**

- Financial and institutional sustainability: Most good practices rely heavily on EU project funding, with **limited sustainability mechanisms beyond the project's duration.** For example, Mums@Work faced challenges in maintaining support services after funding ended. Without long-term financing or integration into national employment systems, many initiatives risk disappearing despite proven impact.
- Certification and skills' recognition challenges: The issue of **skills certification remains a major obstacle.** As Women4Green noted, the absence of shared guidelines or a harmonised approach to defining green jobs and certifying competences creates uncertainty for both employers and trainees. Certification can also be costly, deterring participants unless supported by national systems. This underscores the importance of linking local training schemes to national qualification frameworks and the EU's Skills Agenda (2020).
- Dependence on institutional support: **Institutional backing from local authorities is essential for navigating administrative hurdles.** SolarBau24 demonstrated how bureaucratic complexity can deter employers from engaging with TCN workers if not properly supported.
- Persisting gender inequalities and lack of care infrastructure: Finally, **persistent gendered barriers**, such as workplace harassment, inflexible hours, and lack of childcare, continue to deter women's participation. Idària and Solar Generation both identified the absence of accessible childcare, especially in rural and remote areas, as a major constraint.

Table 4: SWOT analysis of practices of interest for the labour market inclusion of TCNs in the RE and construction sectors

STRENGTHS	WEAKNESSES
Inclusiveness and mainstreaming Peer-support and mutual empowerment Local partnerships and institutional connectivity Short, accessible, and targeted training programmes Place-based and people-centred methodologies (participatory)	Gender imbalances and exclusionary work environments Language and communication barriers Fragile survival of social enterprises and their partnerships with the public Logistical and socioeconomic barriers Limited scale and fragmentation of training offers
OPPORTUNITIES	THREATS
Green jobs as a driver of rural revitalisation Potential to build multi-stakeholder and multi-level networks High employability of trained workers Transnational potential and “brain gain” Digitalisation and knowledge dissemination Advancing gender equality through renewable energy	Policy volatility and shrinking green job markets Financial and institutional sustainability Certification and skills’ recognition challenges Dependence on institutional support Persisting gender inequalities and lack of care infrastructure

In sum, the analysis conducted across these 20+ good practices highlights the diversity, creativity, and local embeddedness of initiatives promoting labour market inclusion of TCNs in the renewable energy and construction sectors, while also identifying recurring systemic barriers. These systemic challenges, especially financial and regulatory, need to be addressed at higher governance levels to ensure long-term impact.

6.2. Sustainability and transferability through the experiences of POWGEN pilots

The POWGEN project aims to incorporate the lessons learned from previous practices, as described in these Guidelines, and to **test the sustainability and transferability of some of their key features through its pilots**. Building directly on the SWOT analysis above, the pilots provide a unique opportunity to verify, in real settings, which approaches work and under what conditions, and to extract operational insights for local and regional authorities seeking to replicate similar initiatives.

- **Barcelona (Spain)** – implemented by ABD and ECOSERVEIS, the Barcelona pilot offered two training itineraries: one on solar photovoltaic installation (244 hours) and one on energy efficiency in buildings (242 hours), each combining technical training, occupational risk prevention, digital competences, transversal employability skills and 80 hours of internships. The pilot demonstrated notably high retention rates, attributed to strong group cohesion, peer support mechanisms, and the provision of transport and basic needs. A key lesson was that company engagement must begin early and be sustained, and that both soft skills and anti-racist, gender-inclusive approaches are as essential as technical content.
- **Offenbach (Germany)** – implemented by Pro Arbeit Kreis Offenbach (AöR), the German pilot targeted long-term unemployed individuals with mixed backgrounds and focused on renewable energies and building renovation. Following an Info Day (September 2025) and a three-day Chancenworkshop profiling phase, participants started the six-month qualification (October 2025 – April 2026), combining daily classroom instruction, weekly company internships, job-related German language training, and digital skills. The program comprises 510 hours of in-company internship and 520 UEs of theoretical and practical instruction (total: 1,030 hours). The pilot highlighted the importance of structured profiling before training, early and continuous company involvement, and the use of visibility tools such as promotional videos to motivate both participants and employers.

- **Perugia (Italy)** – implemented by CIDIS ETS, the Perugia pilot ran two parallel tracks: solar panel installation (164 hours) and building renovation (214 hours), with participants originating from Sub-Saharan Africa, North Africa, Afghanistan, and Latin America. The pilot underscored the crucial role of cultural mediation, the need for maximum scheduling flexibility, and a hands-on, laboratory-based training approach given participants' varying education levels. A key added value was the strengthening of networks between public institutions, the social sector, and private enterprises around a shared TCN inclusion objective.
- **Naples/Regione Campania (Italy)** – implemented jointly by Regione Campania and CIDIS ETS, the Naples pilot focused on renewable energy systems installation (228 training hours) and, in a second track, building renovation. The pilot is notable for the active role of a regional government as implementing partner, and for the coordination between AMIF funding and other national funds to support internship placements. The experience demonstrated that close cooperation between public institutions, craft industry associations (CNA), and the third sector is key to making training relevant to real labour market demand.
- **Lisbon (Portugal)** – implemented by CRESCER, the Lisbon pilot worked across two itineraries – solar photovoltaic installation (204 hours) and energy efficiency in buildings (194 hours). The training design emphasised field visits to companies, practical learning, and individualised job counselling to prevent drop-outs. Key partners included APREN (Portuguese Renewable Energy Association) and ADENE (national energy agency). Early lessons stressed the need for detailed multi-step recruitment, stronger pre-established partnerships with training organisations, and earlier employer engagement.
- **Zaandam/Noord-Holland (the Netherlands) – Replication Pilot** – As part of the EMPOWERGEN Guidelines' small-scale replication task, CPMR selected the Province of Noord-Holland and local VET provider Werkom as a replication partner. Building on Werkom's pre-existing TechCourt Zaandam model – a 12-week practical training programme in installation and electronics combining technical skills, Dutch language at work, safety certification (VCA), and job coaching – the POWGEN replication pilot integrated TCN participants into an existing group in April 2026. The POWGEN-specific additions included solar system installation and roof safety modules, infrastructure lessons, and the use of translation tools and cultural orientation sessions. The pilot was deliberately designed as a short, exploratory

trajectory aimed at learning what works in a Dutch regional labour market context, rather than delivering large-scale certification outcomes.

From the information gathered during the **POWGEN participatory meetings** and through **ongoing exchanges with pilot implementers**, a number of recurring issues emerged. These difficulties are not unique to the POWGEN consortium: they reflect structural challenges already identified in Section 6.1 and offer valuable insights into the practical obstacles that local and regional actors will likely encounter when replicating such initiatives. The main issues reported by implementing organisations include:

- **Selection and engagement of participants:** TCNs, including refugees and asylum seekers frequently showed strong *initial interest* in the training programmes but were *reluctant to commit to unpaid training*, particularly when no immediate income or clear post-training prospect was attached. This confirms one of the key lessons from the SWOT analysis: financial viability is a precondition for sustained participation among people in precarious legal or economic situations.
- **Retention of participants in training programmes:** drop-outs were driven by two main factors. First, *weaknesses in the selection process* meant that participants often did not have a clear understanding of their *future employment prospects* after the training, which gradually reduced motivation. Second, *family commitments* (particularly for women) and *language difficulties* made it hard for some participants to follow the curricula consistently.
- **Lack of teaching experience of trainers with this specific audience:** many trainers, while highly qualified on technical content, had limited prior experience working with TCNs, including refugees and asylum seekers. This often resulted in *pedagogical approaches that did not sufficiently account for linguistic diversity, varied educational backgrounds, or culturally specific learning needs*.
- **Coordination among implementing partners and local stakeholders:** aligning *implementing organisations, local authorities, training institutions, employers, and CSOs supporting TCNs* proved demanding. Coordination tended to depend on the *personal engagement of individual actors* rather than on institutionalised mechanisms, which made the process fragile and difficult to scale.
- **Low involvement of women in training courses:** despite specific efforts to attract female participants, women remained underrepresented in the pilots. This reflects the *structural gender imbalance* of the RE and construction sectors highlighted

earlier, compounded by *care responsibilities, lack of childcare provision, and the persistent perception of these sectors as male-dominated and at times unsafe.*

- **Regulatory uncertainty:** shifting national, EU but also local rules on renewable energy incentives, building retrofitting subsidies, and the legal status of TCNs generated an unstable environment for the pilots. Implementers reported that *changing regulations during project implementation* made it harder to guarantee stable training-to-employment pathways for participants.
- **External shocks and infrastructure-related challenges:** pilots were also affected by *unforeseen events*, including power blackouts and extreme weather conditions (for instance, strong winds that damaged or blew away installed PV panels). These episodes highlight how *climate change itself is becoming a tangible operational risk* for training and employment in the RE sector.

Despite these challenges, the **POWGEN pilots**, and even more so the **replication pilot in The Netherlands**, which benefitted from both the experience of the earlier pilots and from the EMPOWERGEN Guidelines, have tested **a number of practical solutions** that proved effective in overcoming the main obstacles. These solutions are transferable beyond the POWGEN consortium and offer concrete options for local and regional authorities across the EU:

- **Peer-learning and follow-up among TCNs themselves, supported by cultural mediators:** encouraging participants to support one another throughout the training, combined with the involvement of *cultural mediators able to bridge linguistic and cultural gaps*, significantly improved both engagement and retention. This peer-support model echoes the "win-win" dynamics identified in good practices such as ACHIEVE and the Energy Advising Centres in Section 5.
- **Use of up-to-date technology to support training delivery:** the adoption of tools such as *AI-powered simultaneous translation* during training sessions ensured that linguistic barriers did not prevent meaningful participation, allowing trainers and trainees to interact effectively despite mixed language backgrounds (Netherlands small replication pilot). This approach also opens possibilities for *blended and scalable training formats*, in line with the experience of the UNDP/Turkish project on renewable energy training.
- **Integrated language support:** ensuring that participants had either *completed or had access to an A1–A2 language course* before starting the technical training proved essential. Providing *specific work-related language and technical jargon*

courses during the training itself further helped participants acquire the vocabulary needed for safe and effective work in the RE and construction sectors.

- **Small class sizes to foster engagement:** in certain cases, keeping classes small has allowed trainers to *personalise their approach*, monitor individual progress, and respond to specific learning needs. Smaller groups also facilitated *trust-building among participants* and between participants and trainers, which proved particularly important in groups including refugees and asylum seekers who may have experienced trauma or prolonged inactivity.

Taken together, the difficulties encountered and the solutions tested through the POWGEN pilots confirm a key message of these Guidelines: **the sustainability and transferability of training initiatives for TCNs in the RE and construction sectors depend not only on the technical content of the courses, but equally on the relational, linguistic, and organisational conditions surrounding them.** When these conditions are addressed deliberately, even short, project-based initiatives can generate replicable models that local and regional authorities elsewhere in the EU can adapt to their own contexts, and that can usefully inform the recommendations set out in Section 8.

7. Concluding remarks

Overall, the analysis of 20+ good practices across the EU reveals the potential for a dynamic and locally grounded ecosystem of initiatives promoting the labour market inclusion of TCNs in the renewable energy and construction sectors. These initiatives demonstrate how social innovation, skills development, and multi-stakeholder cooperation can converge to deliver both green transition objectives and inclusive employment outcomes. At the same time, they expose structural weaknesses and systemic barriers that hinder scalability and sustainability, underscoring the need for stronger institutional and policy coordination at regional, national, and EU levels.

A first theme concerns **economic and policy sustainability**. Several good practices demonstrate strong short-term results in training and job placement, but their continuity after EU or national funding ends is uncertain (e. g., Mums@work). As national priorities shift, for example, with EU's recent reduction in energy-efficiency incentives, the demand for green jobs can fluctuate sharply, leaving trained workers without stable employment prospects. This underscores the importance of embedding inclusion and green skills objectives within long-term regional development strategies, supported by instruments such as the European Social Fund Plus (ESF+), the Just Transition Fund, and REPowerEU.

In order to address financial volatility, one approach widely experimented is to foster **institutional cooperation and a multi-stakeholders and multi-level governance**. Indeed, the most successful initiatives, such as SOCIALNRG, Achieve, and Joint Protocol (Italy), rely on multi-stakeholder and multi-level partnerships, bridging the gap between local authorities, job centres, social enterprises, and private employers. These networks facilitate the removal of bureaucratic obstacles and create synergies between employment, social inclusion, and climate policies. Such approaches resonate with the EU Action Plan on Integration and Inclusion 2021–2027, which emphasises mainstreaming inclusion into general labour market policies, and with the Social Economy Action Plan (2021), which recognises the role of social innovation in addressing labour shortages. Yet, establishing and maintaining such partnerships is not without challenges. Projects often depend on a small number of motivated actors or local champions, making them vulnerable to turnover or institutional change.

Sustained funding and political commitment are essential to transform these networks from project-based collaborations into enduring governance structures.

A second key theme relates to **training, skills recognition, and employability**. Most initiatives adopt short, practical training formats, ranging from 2 to 10 months (Solar Generation, Job Tracks, Basque Country programmes, the POWGEN project itself), that make upskilling accessible to diverse learners, including those with family responsibilities or uncertain legal status. These models anticipate EU-level trends such as the promotion of micro-credentials and modular learning pathways, aligned with the Union of Skills initiative (European Commission, 2023). The combination of vocational training with language learning, soft skills development, and on-the-job practice has proven particularly effective in increasing employability among TCNs and long-term unemployed persons (EAC). However, the absence of harmonised certification systems and the high costs of competence validation remain major barriers to cross-border mobility and career progression (Women4green). Without national and regional alignment on credential recognition, the proliferation of diverse training materials and digital tools, ranging from online platforms to podcasts and games (STEAMigPOWER, Solar Generation), risks fragmentation and duplication rather than system-level transformation.

A third key theme relates to **gender equality and inclusion of TCNs**, which cut across all four SWOT dimensions. Several projects, such as Mums @work, Solar Generation, and GENDER4Power, illustrate how women's empowerment can be effectively linked to climate action and local labour market participation, reflecting the EU's commitment to gender mainstreaming in the Green Deal. Yet, these same sectors, particularly photovoltaic installation and construction (Refugees Go Solar, Idària), remain highly male-dominated, often characterised by rigid working conditions, limited access to childcare, and a persistence of gender-based harassment. As the European Institute for Gender Equality (EIGE, 2023) warns, without targeted gender-responsive measures, the green transition risks entrenching rather than overcoming occupational segregation. Nonetheless, these initiatives also point to emerging opportunities: the renewable energy sector may, if deliberately steered, become a more inclusive space for women, including TCN women, providing new forms of skilled, stable, and meaningful employment. As also clearly evidenced by the analysed practices, language and communication barriers, along with racism and discrimination, remain among the most persistent challenges to be addressed by initiatives aiming to facilitate TCNs labour market inclusion, regardless of the sector. Some advantages in the RE sector can

be seen in the potential for some jobs to require less language proficiency (see e.g., *Work on Environment*)

Finally, the SWOT analysis highlights the transformative potential of **localised and participatory approaches** which also points to the **specificities of rural areas**. Many initiatives stand out for their co-creation methodologies, where beneficiaries contribute actively to the design and delivery of training and community energy solutions (SOCIALNRG, RENOVERTY, GENDER4Power). Such models promote not only employability but also a sense of agency and belonging among TCNs and other marginalised groups. They illustrate how the green transition can become a vehicle for social reintegration and community resilience, rather than a purely technological or economic process. Moreover, initiatives that emerged in rural areas have encountered clear issues with transportation and with basic services such as childcare, especially relevant for the inclusion of women. Sustained investment in local infrastructure, especially transport, housing, and childcare, is critical to ensure that training translates into real, lasting inclusion outcomes. Initiatives like RENOVERTY and EKIOLA show that investing in green jobs in rural and depopulating areas, which are systemically underserved, can simultaneously address labour shortages, demographic decline, and energy poverty, aligning with the EU's broader Rural Pact and Cohesion Policy objectives.

In conclusion, the lessons emerging from these good practices suggest that while bottom-up, people-centred approaches can successfully bridge skills gaps and promote inclusion in the green economy, their long-term impact depends on systemic support, including coherent certification systems, gender-sensitive labour market policies, and stable funding streams. As the EU deepens its efforts to combine competitiveness, sustainability, and social fairness under the Clean Industry Deal and the Union of Skills, the experiences of these projects offer valuable evidence of what works in practice and where policy coordination is still needed. Strengthening these linkages between local- and regionally driven innovation and EU policy frameworks will be key to ensuring that the green transition becomes not only a driver of decarbonisation but also a catalyst for social inclusion and territorial cohesion across Europe. These findings directly inform the recommendations set out in Section 8.

8. Recommendations for regional and local actors

This last section is the go-to section of the POWGEN EU guidelines for regional and local actors that want to have an immediate overview of both general and more practical suggestions deriving from the research carried out within the POWGEN project. More specifically, section 8.1 presents four main takeaways and eight general recommendations deriving from the research presented in Section 4, the 20+ practices discussed in Section 5 and following their analysis and considerations on the current situation in the EU of Sections 6 and 7. Section 8.2 then adds more practical considerations – TCNs inclusion in the RE and construction sectors in 5 steps – stemming from the contributions of POWGEN stakeholders (i.e., local and regional institutions, training counsellors, CSOs supporting migrants, employers, EU representatives) during the two main POWGEN networking events in Barcelona (2025) and in Lisbon (2026).

8.1 High Level Recommendations on how to tackle labour market inclusion in the RE and construction sectors of TCNs

- **TAKEAWAY 1: High volatility of resources and policy objectives at the EU and national levels regarding the green energy transition**

RECOMMENDATION 1: Regional and local actors should consider **broadening and strengthening the networks** among local actors both regionally (including private sector and third sector organisations – see *Joint Protocol in Italy, Idària*) and across EU countries **to explore alternative funding options** (see *ACHIEVE, but also outside of the EU: Increasing Employability in the Renewable Energy Sector UNDP/Turkish project*).

- **TAKEAWAY 2: Certifications and curricula for the new green jobs still need to be developed and harmonised**

RECOMMENDATION 2: Regional and local actors could take the lead in **defining which green jobs and which trainings are necessary at the local and regional levels**, building on past projects and initiatives and in partnership with third sector organisations (see *Job tracks, Refugees go solar, Women4green*) – but

still considering the potential costs for both employers and employees to acquire a certification. After scouting practices of TCNs labour market integration in the RE sector, POWGEN partners have identified **a limited number of green jobs available for TCNs whose trainings could be standardised**, namely: solar panels installers and maintainers, energy advisors, people trained in buildings' retrofitting. Innovative and niche approaches include youth involvement and the use of IT and gaming skills to identify suitable locations for solar panel installation (see *DOING GOOD* projects).

RECOMMENDATION 3: They could consequentially **employ blended trainings and defining online courses** that are then taken up at the national level (*Job Tracks, UNDP/Turkish project - Increasing Employability in the Renewable Energy Sector*) – see also STEP 2 in Section 8.2

RECOMMENDATION 4: Certifications can and should also be supported through validating instruments such as European Passport Supplements (*UNDP/Turkish project - Increasing Employability in the Renewable Energy Sector*) – see also STEP 2 in Section 8.2

- **TAKEAWAY 3: When it comes to the green energy transition, regional and local authorities have to focus on people-based policy and practices**

RECOMMENDATION 5: Labour market integration in the RE sector of women **needs to consider the specificity of the sector** (still male-dominated) and acknowledge the **need for strict anti-harassment policies** and for accessible childcare services to balance work and family life (see *Women4green, Mums@work*), not to mention fair wages (see *Idària, SolarGeneration*). Engaging with young women might support the transition towards a less male-dominated work environment (see *STEAMig, Women4green, Mums@work*).

RECOMMENDATION 6: Labour market integration of TCNs in the RE sector needs to consider **the specific needs of TCNs and disadvantaged groups when in training**, (i.e., need to earn money). Thus, combinations of short trainings and internships with clear prospects for labour-market integration (see *Joint protocol in Italy, EACs, Refugees go solar, trainings in the Basque Country*). TCNs face **additional threats** linked to their often-precarious legal status, risking deportation if they do not find a stable job, which means that contractual stability should be prioritised (see *Solar Bau 24*). Also, employers need to be trained in diversity and inclusion to ensure that they understand the benefits and challenges of working in a diverse environment (see *Solar Bau 24, Refugees go Solar*). Finally, it needs to be considered that TCNs are mostly employed as

low-skilled labour also in the RE sector and are thus **more exposed to high-risk jobs** in increasingly harsh climate conditions so adequate training on risks and adequate safety measures have to be foreseen (see *EACs*).

- **TAKEAWAY 4: When it comes to the green energy transition, regional and local authorities have to focus on *place-based* policy and practices**

RECOMMENDATION 7: The **divide between countries** (and regions) that are more advanced in the use of renewable energies and the rest of Europe **could be used as an advantage**; it is important to build on the experience of greener cities and regions (e.g., in Denmark, Portugal, Sweden) and partner with them to develop place-specific policies and solutions to green energy transition issues (see *DOING GOOD and City of Malmo projects, POWGEN Crescer – Portugal POWGEN pilot*).

RECOMMENDATION 8: The **urban vs. rural divide** should be tackled by paying particular attention to transportation solutions in rural areas (see *Mums@work*) and to the development of renewable energy communities (see *RENOVERTY, EKIOLA*). The main challenges in establishing renewable energy communities are mobilizing a sufficient number of people and building strong public-private partnerships within a specific area to demonstrate their benefits. Regional authorities can play a key role by **leveraging available EU funds to support and encourage the creation of these communities** (see *EKIOLA, Renovant Energies*), not only in rural areas but also in energy poor neighbourhoods (see *SOCIALNRG*). Another possibility in rural areas is to work with Local Action Groups (LAGs), who receive LEADER funding to aid the development of rural areas themselves. LAGs include businesses, municipalities, and non-profits supporting initiatives that contribute to rural development, including training programmes or renovation works for private buildings. The scope of LAGs work is large and varies per region.

RECOMMENDATION 9: One final, general consideration on barriers to TCNs' labour market inclusion in many industry sectors (also including RE) is that **mobility is not foreseen for TCNs, not across EU countries nor across regions** (see *Job Tracks; OECD, 2025*). Despite not having a direct competence on these matters, **local and regional authorities should still advocate for greater attention on the subject by national and EU authorities**. Indeed, shortages in labour market supply and the specific need for workers in the green energy sector require a higher level of flexibility and potential for mobility within EU countries and regions for TCNs.

8.2 Practical recommendations from POWGEN stakeholders to local and regional authorities for the implementation of pilots and trainings

These focus on **practical recommendations and tools** stemming from the lived experience of POWGEN regional and EU clusters and stakeholders in implementing POWGEN pilot trainings and are specifically aimed at supporting local and regional governments in the process of promoting the inclusion of TCNs in the RE and construction sectors.

Practical recommendations are divided into **5 “steps”** so that regional and local authorities that might want to engage in this process can follow these recommendations **from the planning and needs’ assessment phase to the placement phase and integration of TCNs in the fabrics of the local community**. Clearly, **all steps can be implemented separately or non-sequentially**, depending on available resources and/or national/regional/local specificities. All practical recommendations are listed in order of priority as identified by the EU, regional and local stakeholders who were present during the POWGEN Lisbon meeting.

STEP 1: Assessing regional and local skills’ demand and supply.

According to the POWGEN stakeholders who worked on case studies during the Barcelona meeting, the first step to foster labour market integration of TCNs in RE and construction sectors is **to ensure that the local or regional government has a precise understanding of the regional/local skills’ demand and supply**. Here are the practical recommendations formulated by the POWGEN Barcelona meeting participants to achieve this purpose, which are validated and further compounded by the participants of the Lisbon event.

- a. Support the mapping of local and regional employers’ needs in terms of skills**, by actively engaging with businesses in the RE and construction sectors to identify current and anticipated gaps. This mapping exercise provides the evidence base on which all subsequent training and placement decisions should rest.
- b. Take a leading role in defining and operationalising the skills and qualifications needs of the RE sector**, working with sector bodies, employers, and training providers to translate broad workforce demands into concrete,

actionable competency frameworks. Without this definitional work, training offers risk remaining disconnected from real labour market needs. Special attention should be devoted to avoiding further strengthening of the already well documented occupational segregation of TCNs in EU and national labour markets.

- c. Support the establishment of skills assessment centres where hard skills are tested and certified**, giving TCNs a formal route to have their existing competencies recognised. This is particularly important for workers who have acquired valuable experience informally or in other countries but lack documentation that employers can readily understand.
- d. Establish (week-long) job fairs** that bring together employers, training providers, and jobseekers in a sustained and structured format. Unlike single-day events, longer fairs allow for more meaningful exchanges, practical demonstrations, and the beginnings of genuine employer-candidate relationships.

The stakeholders further underlined the need to:

- e. Focus on informal skills as part of the mapping exercise**, ensuring that the assessment of local supply does not overlook competencies acquired outside formal education or employment. Many TCNs bring significant practical expertise that standard qualification-based mapping tools fail to capture.
- f. Benchmark the real needs of the sector** against what training and employment systems currently offer, in order to identify mismatches early. This ongoing benchmarking function helps authorities stay responsive to a sector that is evolving rapidly, particularly as the green transition accelerates demand for new technical profiles.

STEP 2: Supporting the definition of training and curricula

Once a clear picture of local skills demand and supply has been established, local and regional authorities should play an active role in shaping the training offer to match those needs. POWGEN stakeholders identified the following practical recommendations:

- a. Promote dual training**, where classroom learning is combined with hands-on workplace experience and companies act as active facilitators in the learning process. This approach has proven particularly effective in bridging the gap

between formal qualifications and the practical competencies employers actually need

- b. Ensure funding for paid training**, so that participation is financially viable for TCNs who cannot afford to forgo income. Unpaid training is a key drop-out driver, particularly for people with family responsibilities or precarious living conditions.
- c. Promote curricula and training based on micro-credentials**, which allow learners to build qualifications incrementally and make their skills legible to employers across borders. Micro-credentials are especially suited to the RE and construction sectors, where specific technical competencies can be certified modularly.
- d. Ensure the availability of childcare services during training sessions**, recognising that access to care is a prerequisite for participation, particularly for single parents. Local authorities should either provide this directly or coordinate with social services to make it available.

Stakeholders during the Lisbon event further underlined the need to:

- e. Establish feedback loops with companies and trainees** to ensure that training content remains relevant and responsive to evolving sector needs. Regular dialogue with employers and employment intermediaries helps identify gaps early and adjust curricula accordingly.
- f. Acknowledge and accommodate the cultural and practical barriers** that TCNs may face when accessing formal training — including recognition of prior informal learning, language barriers, and unfamiliarity with local credentialing systems. Training providers should be supported to adapt their approaches rather than expecting participants to conform to a one-size-fits-all model.

STEP 3: Supporting fair, decent and long-term placement

Securing a training place is only part of the journey. Ensuring that TCNs transition into stable, fairly remunerated, and long-term employment requires deliberate action from local and regional authorities throughout the placement process.

- a. Support the funding of apprenticeships that lead to long-term employment**, prioritising schemes that include a clear pathway to a permanent contract. Short-term or precarious placements risk undermining both the motivation of workers and the return on training investment.

- b. Promote and fund technical language training** during the first phases of placement, alongside structured opportunities for mingling and informal exchange among co-workers. Language and social integration on the shop floor are as important as technical skills for long-term retention.
- c. Promote post-project continuity** and lead integration strategies with employers at the local and regional level, ensuring that the end of a funded project does not mean the end of a worker's employment trajectory. Authorities should act as long-term convenors, not just project managers.
- d. Ensure funding for empowerment, anti-harassment, anti-racism, inclusion and diversity training**, targeted not only at employers and employees but also at the broader local community. Workplace integration is inseparable from social integration, and both require sustained investment.

Stakeholders during the Lisbon event further underlined the need to:

- e. Address the administrative situation of TCNs after training**, including by advocating for and facilitating fast-track regularisation pathways where applicable. Uncertainty about legal status is one of the most significant barriers to stable employment and should not be left for workers to navigate alone.
- f. Communicate income potential** clearly and consistently throughout the process — from recruitment to training to placement — so that participants have a realistic and motivating picture of where the pathway can lead them.
- g. Treat this as a structured, replicable process rather than a one-off pilot.** Local and regional authorities should work to embed successful approaches into mainstream employment and integration policy, building step-by-step institutional frameworks that outlast individual projects and can be scaled or replicated across contexts.
- h. Ensure that training content remains aligned with sector developments** so that workers are equipped for where the RE and construction sectors are heading, not just where they are today. This is key to guaranteeing long-term employability.

STEP 4: envisaging durable solutions for the needs of workers, employers and the territory

Labour market integration does not happen in a vacuum. For TCNs to genuinely thrive in the RE and construction sectors, local and regional authorities need to address the wider conditions that make stable working lives possible.

- a. **Provide social housing options for TCNs** as part of broader integration and stability efforts. Secure and affordable housing is a foundational condition for sustained employment, and its absence is a frequent cause of drop-out from training and placement programmes.
- b. **Provide free access to language training and/or encourage peer-to-peer language exchange** at the community level. Language acquisition is a gradual process that extends well beyond the workplace, and sustained support is needed to enable full social and civic participation.
- c. **Make work in the RE sector attractive by promoting STEM in school programmes**, building a long-term pipeline of interest and competence among young people in the territory, including from communities with higher proportions of TCNs.
- d. **Promote the labour integration of TCNs at the local level as an opportunity for the whole community**, particularly in rural or peripheral areas where social cohesion can be fragile. Framing inclusion as a collective benefit — rather than a burden or a special measure — helps counter narratives that fuel radicalisation and division.

Stakeholders during the Lisbon event further underlined the need to:

- e. **Ensure that basic needs are covered as a starting point**, including targeted support for single mothers and other groups facing compounded vulnerabilities. Employment integration built on an unstable foundation of unmet basic needs is unlikely to be durable.
- f. **Ensure collaboration across sectors** — housing, employment, energy, and social services — so that the conditions for integration are addressed in a joined-up way rather than in silos.

STEP 5: Ensuring coordination among local and regional stakeholders

None of the above steps can be achieved by a single actor working alone. Effective coordination among local and regional stakeholders is both the precondition and the glue that holds the entire process together.

- a. **Gather all relevant local and regional stakeholders — employers, public institutions, training centres, civil society organisations, and trade unions — from the very beginning of the process.** Late or partial involvement of key actors is a common source of misalignment and wasted effort.

- b. Establish intermediary figures or dedicated units** to improve coordination and communication between departments within the same institution, particularly in contexts characterised by high levels of institutional fragmentation. Someone needs to hold the whole picture.
- c. Develop coordination mechanisms with employers and VET training providers** to monitor placements in real time and intervene early to prevent drop-outs. Reactive approaches are rarely sufficient; proactive tracking makes a measurable difference.
- d. Make better and more strategic use of existing EU tools and funding**, including Skills Passports, Erasmus+, the European Social Fund, and DG Employment initiatives. Many of these resources are underused at the local level simply due to lack of awareness or coordination capacity.

Stakeholders during the Lisbon event further underlined the need to:

- e. Establish monitoring tools** to track progress, measure outcomes, and generate the evidence base needed to sustain and scale successful approaches. What gets measured gets managed – and gets funded.
- f. Ensure horizontal coordination across energy, employment, social, and housing departments** to create the integrated institutional conditions that durable employment and integration require. Vertical silos between policy areas are one of the most persistent obstacles to effective action.
- g. Secure commitment from all public stakeholders from day one**, treating TCN labour integration in the RE sector as a shared political priority rather than a marginal project. Visible institutional commitment signals seriousness and helps mobilise other actors.
- h. Create local public bodies or multi-stakeholder clusters with explicit competences** to address coordination challenges. Formalising coordination – rather than relying on goodwill and informal relationships – is essential for longevity and accountability.

Taken together, these five steps point to **four overarching areas where local and regional governments have both the greatest leverage and the greatest responsibility.**

- The first is **funding**: ensuring that training, placement, language support, childcare, housing, and anti-discrimination efforts are adequately and sustainably resourced, rather than dependent on short project cycles.
- The second is **engagement and coordination of stakeholders** — not only within a single municipality or region, but translocally, transregionally, and with national-level actors.
- The third area is **institutional support for both TCN integration and the RE and construction sectors**, recognising that these two agendas are deeply intertwined: a just green transition requires a diverse, skilled, and stable workforce, and that workforce can only thrive if the institutional conditions for integration are firmly in place.
- Finally, **dissemination of results** is not a bureaucratic afterthought but a strategic responsibility: sharing what works — and what does not — across regions, countries, and policy communities is what turns local experimentation into transferable knowledge and lasting change. Authorities that invest in documenting and communicating their experience contribute to a growing collective intelligence that benefits the entire field.

References

- Biagi, F., Deuster, C. and Natale, F. (2025), *A Demographic Perspective on the Future of European Labour Force Participation*, Publications Office of the European Union, Luxembourg, https://data.europa.eu/doi/10.2760/0326281_JRC141153.
- Cedefop & UNESCO-UNEVOC (2025). *Meeting skill needs for the green transition. Skills anticipation and VET for a greener future. Cedefop practical guide 4*. Publications Office of the European Union.
<http://data.europa.eu/doi/10.2801/6833866>
- Center for Global Development (2023). *Fulfilling the EU's new green skilled mobility goals*.
<https://www.cgdev.org/blog/fulfilling-eus-new-green-skilled-mobility-goals>
- Climate Change Performance Index. (2026a). *Slovenia – Climate performance ranking 2026*. Available at: <https://ccpi.org/country/svn/>
- Climate Change Performance Index. (2026b). *Spain – Climate performance ranking 2026*. Available at: <https://ccpi.org/country/esp/>
- Council of the European Union (2022). Council Recommendation of 16 June 2022 on learning for the green transition and sustainable development. 2022/C 243/01
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022H0627%2801%29>
- De Cian, E., Falchetta, G., Pavanello, F., Romitti, Y., and Wing, I. S. (2025). The impact of air conditioning on residential electricity consumption across world countries. *Journal of Environmental Economics and Management*. Vol. 131.
<https://doi.org/10.1016/j.jeem.2025.103122>.
- De Coninck, D., Solano, G. (2023) Integration policies and migrants' labour market outcomes: a local perspective based on different regional configurations in the EU. CMS 11, 23.
- Donoso Salas, J. and M. Tharaux (2026). How can regions attract and retain the talent needed for the green transition?, *OECD Regional Development Papers*, No. 172, OECD Publishing, Paris, <https://doi.org/10.1787/fc604906-en>.
- EIGE – European Institute for Gender Equality (2023). Gender Equality Index 2023: Towards a green transition in transport and energy. Available at:

<https://eige.europa.eu/publications-resources/publications/gender-equality-in-dex-2023-towards-green-transition-transport-and-energy>

- ERRIN – European Regions Research & Innovation Network. (2024). *European Commission launches the Union of Skills*.
<https://errin.eu/news/european-commission-launches-union-skills>.
- EURES. (2025). *Labour market information: Slovenia*. European Employment Services.
https://eures.europa.eu/living-and-working/labour-market-information/labour-market-information-slovenia_en
- Eurocities. (2023). *Cities social trends paper: Green Skills for Vulnerable People*.
<https://eurocities.eu/resources/local-findings-on-green-skills-for-the-most-vulnerable/>
- European Agency for Safety and Health at Work (EU-OSHA) (2013) Green jobs and occupational safety and health: Foresight on new and emerging risks associated with new technologies by 2020. Report
- European Commission (2019). The European Green Deal. COM/2019/640 final
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019DC0640>
- European Commission (2022). *Council Recommendation on a European approach to micro-credentials for lifelong learning and employability* (2022/C 243/02). Official Journal of the European Union.
- European Commission (2022a). GreenComp, the European sustainability competence framework, Publications Office of the European Union.
<https://data.europa.eu/doi/10.2760/13286>
- European Commission (2022b). Complementary Climate Delegated Act.
https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_712
- European Commission (2023). *Employment and Social Developments in Europe: addressing labour shortages and skills gaps in the EU*. European Commission, Directorate-General for Employment, Social Affairs and Inclusion. European Union, doi: 10.2767/089698 KE-BD-23-002-EN-N.
- European Commission (2023a). *European Year of Skills 2023: What the EU is doing for you*. https://year-of-skills.europa.eu/about/what-eu-doing-you_en
- European Commission (2023c). *Regional Trends for Growth and Convergence in the European Union*. SWD(2023) 173 final.
https://ec.europa.eu/regional_policy/sources/reports/swd_regional_trends_growth_convergence_en.pdf

- European Commission (2023d). Employment and Social Developments in Europe (ESDE) Addressing labour shortages and skills gaps in the EU.
<https://op.europa.eu/webpub/empl/esde-2023/chapters/chapter-2-1.html>
- European Commission (2024a). *Labour and skills shortages in the EU: an action plan* (COM(2024) 131 final).
- European Commission (2024b). *Speech by President von der Leyen*. State of the Union 2024. <https://commission.europa.eu/system/files/2024-09/SOTEU2024.pdf>.
- European Commission (2025). *Estimating labour market transitions and skills investment needs of the green transition: a new approach*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2767/4332366>.
- European Commission (2025a). Clean Industrial Deal.
https://commission.europa.eu/topics/eu-competitiveness/clean-industrial-deal_en
- European Commission (2025b). Affordable Energy Action Plan. COM/2025/79
https://energy.ec.europa.eu/strategy/affordable-energy_en
- European Commission (2025c). *The Union of Skills*. COM(2025) 90 final.
- European Commission. (2023b). *Green Deal Industrial Plan: Plugging the skills gap*.
https://year-of-skills.europa.eu/green-deal-industrial-plan-plugging-skills-gap_en
- European Commission. (2025d). *Slovenia's recovery and resilience plan*.
https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/slovenias-recovery-and-resilience-plan_en
- European Commission: Directorate-General for Energy & Cornelis, M. (2025). *Framing summer energy poverty : insights and recommendations for a resilient future : final report*, Publications Office of the European Union.
<https://data.europa.eu/doi/10.2833/3135617>
- European Committee of the Regions (2023). Opinion of the European Committee of the Regions on small urban areas as key actors to manage a just transition. 2023/C 79/08
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022IR0136>
- European Committee of the Regions (2024). A multilevel governance for the Green Deal – Towards the revision of the Governance Regulation. C/2024/1046
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C_202401046
- European Environment Agency (2025). Monitoring report on progress towards the 8th EAP objectives – 2024 edition.

<https://www.eea.europa.eu/en/analysis/publications/monitoring-progress-towards-8th-eap-objectives>

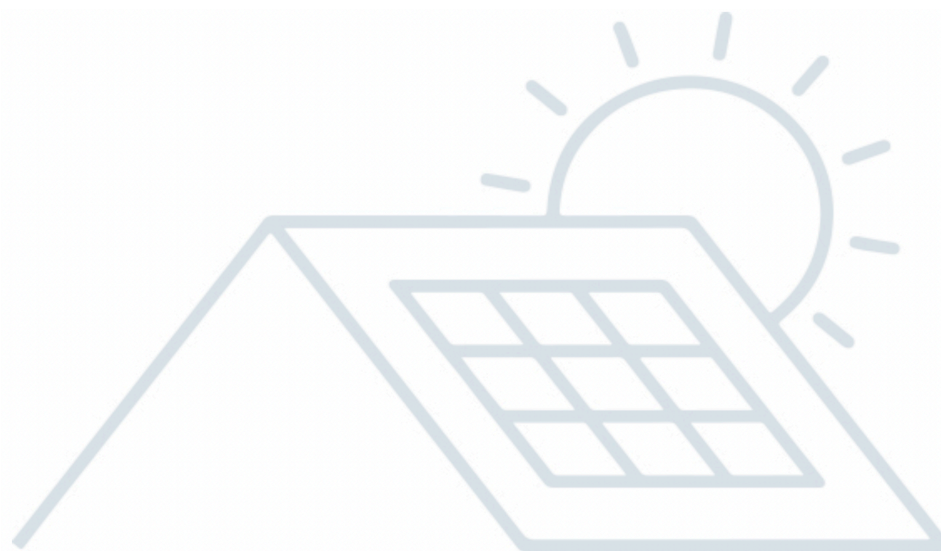
- European Investment Bank (2025). EIB Investment Survey 2024 Country Overview: Sweden.
<https://www.eib.org/en/publications/20240238-econ-eibis-2024-sweden>
- European Labour Authority (ELA) (2024). Country fiche: The Netherlands. EURES Report on labour shortages and surpluses 2023.
https://www.ela.europa.eu/sites/default/files/2024-07/Eures-Shortages_Extra-4_NL.pdf?utm
- European Labour Authority (ELA) (2025). *Labour shortages and surpluses in Europe 2024*.
- European Migration Network (EMN) (2024), Labour market integration of beneficiaries of temporary protection from Ukraine: Joint EMN-OECD inform'.
- European Parliament and Council. (2021a). *Regulation (EU) 2021/1056 establishing the Just Transition Fund*. Official Journal of the European Union.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1056>.
- European Parliament and Council. (2021b). *Regulation (EU) 2021/1057 on the European Social Fund Plus (ESF+)*. Official Journal of the European Union.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1057>.
- European Parliament and Council. (2021c). *Regulation (EU) 2021/817 establishing Erasmus+*. Official Journal of the European Union.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R0817>.
- European Parliament and Council. (2021d). *Regulation (EU) 2021/1147 establishing the Asylum, Migration and Integration Fund (AMIF)*. Official Journal of the European Union.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1147>.
- European Parliament and Council. (2021e). *Directive (EU) 2021/1883 on the EU Blue Card*. Official Journal of the European Union.
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021L1883>
- European Parliamentary Research Service (2024). Sweden's climate action strategy. Roadmap to EU climate neutrality – Scrutiny of Member States.
[https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/767174/EPRS_BRI\(2024\)767174_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/767174/EPRS_BRI(2024)767174_EN.pdf)
- European Parliamentary Research Service. (2025). *Roadmap to EU climate neutrality – Scrutiny of Member States: Slovenia* (Briefing PE 769.559). European Parliament.
[https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2025\)769559](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2025)769559)

- Eurostat (2024). Foreign-born population in private households by main obstacle to get a suitable job, country of birth and educational attainment level.
https://ec.europa.eu/eurostat/databrowser/view/lfsq_2lobst01/default/table?lang=en&category=mi.mii.mii_lfsq.lfsq_2l_cc.lfsq_2lobst
- Eurostat (2025). *Job vacancy statistics*.
https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Job_vacancy_statistics
- Fasani, F., Frattini, T., & Minale, L. (2022). (The Struggle for) Refugee integration into the labour market: evidence from Europe. *Journal of Economic Geography*, 22(2), 351–393.
- Federico, V. & Baglioni, S. (2021). *Migrants, Refugees and Asylum Seekers' Integration in European Labour Markets. A Comparative Approach on Legal Barriers and Enablers*. IMISCOE Research Series, Springer Cham.
- FIEC – European Construction Industry Federation (2023). *Shortage of labour in the construction industry*. Position paper.
https://www.fiec.eu/application/files/6216/9711/5277/2023-10-12_Shortage_of_Labour_in_the_Construction_industry.pdf
- Galvany, N., Giardina, F., Masci, I. & Panella, L. (2025). “Green pathways to inclusion: POWGEN good practices on training and labour access of migrant people in the renewable energy and refurbishment sector”. Available at:
<https://powgenproject.org/wp-content/uploads/2025/02/good-practices-powgen-eng.pdf>
- Huckstep, S. and Dempster, H. (2024). Meeting Skill Needs for the Global Green Transition A Role for Labour Migration? Center for Global Development. Policy paper 318.
- International Labour Organization (ILO). (2019). *Skills for a greener future: European synthesis report on skills for green jobs*. ILO Publications.
<https://www.ilo.org/publications/european-synthesis-report-skills-green-jobs>
- Istituto Affari Internazionali (IAI). (2024). *Training, reskilling, upskilling: How to create jobs through the green transition*.
<https://www.iai.it/en/pubblicazioni/c05/training-reskilling-upskilling-how-create-jobs-through-green-transition>
- Kuokkanen, A. (2023). *Skills for the energy transition in the changing labour market*, European Commission, Petten, JRC135382.
- Lázaro Touza, L., Briones, A., Tirado Sarti, S., Averchenkova, A., López Gunn, E., and Escribano, G. (2025). From phasing-out to phasing-in: lessons from Spain's just transition governance framework. Real Instituto Elcano. Available at:

<https://www.realinstitutoelcano.org/en/analyses/from-phasing-out-to-phasing-in-lessons-from-spains-just-transition-governance-framework/>

- Lores, F. and Garcia, J. R. (2025). Spain | The labor shortage in the construction sector. BBVA Research. Available at:
<https://www.bbvaresearch.com/en/publicaciones/the-labor-shortage-in-the-construction-sector>
- Lloyd's Register Foundation (2025). *The Impact of Climate Change on Occupational Safety and Health in Selected Sectors. A Scoping Review*. Global safety evidence centre. Evidence review.
<https://www.lrfoundation.org.uk/sites/default/files/2025-07/the-impact-of-climate-change-on-occupational-safety-and-health-in-selected-sectors-a-scoping-review.pdf>
- OECD (2018). *Working Together for Local Integration of Migrants and Refugees*, OECD Regional Development Studies, OECD Publishing, Paris,
<https://doi.org/10.1787/9789264085350-en>.
- OECD (2024). *OECD Employment Outlook 2024: The Net-Zero Transition and the Labour Market*. OECD Publishing. <https://doi.org/10.1787/ac8b3538-en>.
- OECD (2025a). *Measuring and assessing talent attractiveness in OECD countries, second edition*. Written by: Lisa Andersson. Methodology Paper.
https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/04/measuring-and-assessing-talent-attractiveness-in-oecd-countries-second-edition_bed07946/133b6085-en.pdf
- OECD (2025b), *Mobility and Integrated Labour Markets for Third-country Nationals in Greater Copenhagen*, OECD Reviews on Local Job Creation, OECD Publishing, Paris, <https://doi.org/10.1787/ba2a4777-en>.
- OECD (2025c). A territorial approach to the Sustainable Development Goals in the Basque Country, Spain. OECD Regional Development Papers.
https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/04/a-territorial-approach-to-the-sustainable-development-goals-in-the-basque-country_bb15d255/7204b9d9-en.pdf
- Perino M., M. Eve (2017). *Torn nets. How to explain the gap of refugees and humanitarian migrants in the access to the Italian labour market*. Fieri working paper.
- Schwab, Thomas (2023). The renewable energy transition can reduce economic disparities in Europe. Policy Brief
<https://www.bertelsmann-stiftung.de/en/topics/latest-news/2023/december/energy-transition-a-boost-for-europes-rural-regions#detail-content-241112-3>

- Seiger, F. (2024). *The contribution of Third Country Nationals to the twin transition in the EU*. JRC Science for Policy Brief. JRC 137170.
- Statistical Office of the Republic of Slovenia (2024). *Highest number of persons in employment, increase in foreign citizens*.
<https://www.stat.si/StatWeb/en/news/Index/12986>
- Statistical Office of the Republic of Slovenia (2025). *In June, more persons in employment, including the highest number of foreign citizens to date*.
<https://www.stat.si/StatWeb/en/News/Index/13786>
- Vandeplas, A., Vanyolos, I., Vigani, M., & Voegel, L. (2022). *The possible Implications of the Green transition for the EU labour Market*.
https://economy-finance.ec.europa.eu/system/files/2022-12/dp176_en_green%20transition%20labour.pdf
- Vogel, A. (2016). *Working conditions in construction: a paradoxical invisibility*. European Trade Union Institute.
https://www.etui.org/sites/default/files/Hesamag_13_EN_12-16.pdf
- World Economic Forum (2025). *The Future of Jobs Report 2025*.
<https://www.weforum.org/publications/the-future-of-jobs-report-2025/>





POWGEN