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# Labour market trajectories, social protection and the green transition in France and Viet Nam

Authors / Anil Duman, Sevane Ananian



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# Abstract

This study investigates labour market transitions to green occupations in France (2017–2021) and Viet Nam (2021–2022) using the longitudinal dimension of labour force surveys in the two countries. According to a task-based definition of green jobs derived from the ISCO-08 classification, our findings show that 21.5 per cent and 15 per cent of workers in France and Viet Nam, respectively, are employed in green jobs. In particular, education appears to have a substantial impact on the transition to green occupations, suggesting that investment in skills may facilitate green transitions in the labour market. Moreover, women are less likely to transition to green jobs than men. Finally, our findings highlight the role of social protection systems, in particular unemployment insurance, in supporting green transitions in the labour market.

# About the authors

**Anil Duman** is a Professor at Central European University in Vienna, Austria. Her broad research interests include labor economics, political economy, industrial relations, welfare state policies, and redistribution. In her recent research, she has been specializing on informal employment and migration.

**Sevane Ananian** joined the Research Department of the International Labour Organization (ILO) as an economist in September 2021. His areas of expertise are inequality, wages and working conditions, and the transition to a green economy.

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### Introduction

Many international organizations stress the importance of a green transition in fostering environmentally friendly economic growth. They highlight the creation of green jobs as a means of reducing carbon footprints and enhancing resource efficiency. Green occupations, characterized by their focus on sustainability and low environmental impact, play a pivotal role in mitigating the human footprint on the environment and adapting to its adverse effects. As the world grapples with the need for a rapid and comprehensive response to climate change, transitioning to green occupations emerges as a key strategy for promoting ecological resilience and ensuring a sustainable future. However, the move towards green jobs will have major impacts on labour markets worldwide, as shifting to a green economy entails both the creation and the destruction of jobs. This may ultimately have a positive net impact on employment (ILO 2018).

This dynamic process reshapes the trajectories of individuals in the labour market, with some transitioning from declining sectors into areas of the green economy experiencing growth. Throughout the transition, the move towards achieving green growth will yield extensive but uneven impacts. As non-green jobs vanish, green occupations will emerge as a result of decarbonization in existing high-carbon economic activities and increased labour demand in low-carbon sectors. New entrants to the labour market may secure initial employment in expanding sectors, while others may face job losses, leading to prolonged unemployment or even their exit from the labour force. Nonetheless, the ability to move to green jobs is not distributed equally, and workers with the right qualifications are expected to be better prepared for the green transition. Demographic features such as age and sex affect overall transition rates in labour markets and can also influence moves from non-green to green jobs. Other factors, such as skills, may also have an impact. For instance, high-skilled employees and employees residing in urban areas tend to work in occupations that have higher green intensity, suggesting that the shift to the green economy could be smoother for them than for less-skilled or rural workers (Bluedorn et al. 2022).

On the other hand, as new green industries often experiment and test business options, we can also expect to see higher volatility in some of the new green industries, which will pose additional challenges for labour market transitions. For example, beyond the risk of failure that new products may face, previous analyses focusing on innovation have highlighted a potential association with substantial displacement effects, such as those induced by productivity gains, but noted that other mechanisms may compensate for such displacements (Harrison et al. 2008; Kancs and Siliverstovs 2017).

Within this framework, social protection systems, including unemployment insurance, provide essential tools to support and promote green transition policies, mitigating potential adverse effects on the labour market. Through unemployment benefits and active labour market policies, social protection can provide individuals with the resources and time they need for skills development, job searches and accessing placement services. This includes assistance for those encountering difficulties in securing new employment (ILO 2023). Social protection schemes also serve as a crucial framework at the macroeconomic level, accommodating structural changes and facilitating the transition of workers to sectors that are more environmentally sustainable. The potential role of social protection in supporting adjustments in the labour market following massive shocks in the economy has been highlighted by studies analysing crisis contexts, including the 2008 financial crisis and the coronavirus disease (COVID-19) pandemic (Spadafora 2023; Kekre 2023). For example, unemployment insurance can enable individuals to secure employment that matches their skills, rather than hastily accepting any available job, and in this regard may have a positive effect on workers' willingness and capacity to find employment in

green occupations. Similarly, social protection can give workers enough resources to rely on during spells of unemployment or other negative labour market experiences. Such safety nets can allow individuals to seek and obtain jobs in green sectors.

Given the above background, the main purpose of this working paper is to provide empirical evidence on the labour market transitions currently observable in two countries at different levels of development, while also gathering initial evidence on the possible role of social protection in these specific transitions. However, such an analysis requires other key research questions to be addressed first, including those relating to the identification of green occupations through the data currently available to most countries for longitudinal labour market studies, in particular labour force surveys.

The working paper first discusses the various metrics for green jobs used in the literature and explains the reasons for adopting a task-based definition. It then examines the transition of workers in and out of green jobs in France and Viet Nam across time. The choice of these two countries was guided by the availability of survey data in the ILOSTAT microdata repository and by the efforts both countries are both making to "green" their economies.<sup>1</sup> Comparing countries from different regions and at different levels of development also allows us to illustrate possible variations in terms of outcome. In addition to overall transition rates, we consider age, sex and education levels in both countries with a view to understanding the ability of various categories of workers to move to a green job. The last part of the working paper highlights the relationship between social protection and the transition to green occupations by focusing on unemployment benefits in France and social security in Viet Nam. Through regression analysis, it compares the mobility of workers benefiting from unemployment assistance and social security with that of individuals without such coverage.

In both countries, these efforts are also reflected in recent developments. At the twenty-sixth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in 2021, Viet Nam undertook to reduce its net carbon emissions to zero by the middle of the twenty-first century. France, meanwhile, set up an institution in July 2022 to ensure the effectiveness of environmental planning.

# ▶ 1 Defining green jobs

### **Broad classifications**

One of the central challenges in identifying green jobs is the lack of a universally accepted definition (ILO 2018). In general, efforts to formulate such definitions can be grouped into two primary approaches to the sectors and occupations concerned: exclusive and inclusive. Narrower classifications often centre on specific industrial sectors, such as the environmental sector, or on particular roles within these sectors. In contrast, inclusive definitions encompass a broader spectrum of employment, recognizing the substantial influence that the transition to net zero emissions will exert on a wide array of occupations (Sofroniou and Anderson 2021). Besides their scope, existing classifications also vary with regard to their focus, each underlining different aspects such as environmental impact, sustainability, decent work, and innovation and transition. For example, the International Labour Organization (ILO) emphasizes decent work that connects developmental goals with environmental protection, while the European Commission bases its description of a green job on information, technologies or materials that preserve or restore environmental quality (ILO 2018; Eurostat n.d.).

The European Commission defines the environmental goods and services sector (EGSS), also referred to as the environmental economy or eco-industries, as "consist[ing] of a heterogeneous set of producers of goods and services aiming at the protection of the environment and the management of natural resources" (Eurostat n.d.). Within this framework, a "green job" refers to any occupation in these specific sectors. However, gathering data using this definition can be challenging, as only a limited number of countries, primarily within Europe, currently publish EGSS estimates.

The ILO provides another internationally recognized definition of green jobs, which differs from the EGSS definition in two key aspects. In addition to activities related to environmental protection, the ILO definition encompasses broader environmental efforts, including community adaptation to climate change. Moreover, to qualify as a green job, an occupation must also meet certain standards for decent work, including considerations relating to fair pay and safe working conditions (ILO 2018). Even though the ILO's approach is more comprehensive and emphasizes a just transition for the workforce and the creation of high-quality jobs, introducing decent work into the definition raises other challenges, such as the difficulty of measuring quality.

There have also been a number of studies focusing on specific countries. For example, in France, national definitions of greening and green jobs are used to identify green occupations (ONEMEV 2022). In the United States of America, green goods and services are identified by applying the North American Industry Classification System (Bureau of Labor Statistics n.d.).

### **Task-based classifications**

In discussions of green jobs, skills emerge as a recurring theme, particularly when transitions in the labour market are under scrutiny. There is a growing trend in the literature for tasks to be used as the basis for estimating the "greenness" of occupations. Beginning with the taxonomy of green occupations in the United States using the database maintained by the O\*NET Resource Center, tasks have been differentiated by their contribution to environmental sustainability and

reducing greenhouse gas emissions. In Dierdorff et al. (2009), a whole range of economic activities "related to reducing the use of fossil fuels, decreasing pollution and greenhouse gas emissions, increasing the efficiency of energy usage, recycling materials, and developing and adopting renewable sources of energy" are included in the classification of green jobs into three categories: "new and emerging", "enhanced skills" and "increased demand". By taking these groupings into account, Vona et al. (2018) have established a continuous metric to assess the environmental sustainability of a range of Standard Occupational Classification (SOC) eight-digit occupations. This innovative measure of an occupation's environmental impact is derived from an analysis of both green and non-green tasks specific to each occupation. Green task intensity represents the proportion of green tasks are assigned a green task intensity of zero. This eight-digit SOC encoding is then aggregated to the six-digit level, for which employment data are available, using a simple averaging approach.

The same process is followed to determine which occupations are "brown", or polluting. These are jobs that are mainly present in the most polluting or ecologically destructive industries in the United States. Polluting occupations are a subset of those identified as having zero green task intensity within the United States occupational classification system. A two-step process is undertaken to estimate the "brownness" task index for these occupations. In the first step, sectors are labelled as polluting if per worker emissions for at least three polluting substances are above specified thresholds. In the second step, brown occupations that are most prevalent in these sectors are identified by selecting those with a probability of working in polluting sectors seven times higher than in any other job (Vona et al. 2018).

This methodology has been adopted by several other researchers, who have mapped the occupations in question to the International Standard Classification of Occupations 2008 (ISCO-08) scheme (Scholl et al. 2023; Bluedorn et al. 2022; Elliott et al. 2021; Valero et al. 2021). The green and brown task intensities for occupations at the eight-digit SOC level are translated into ISCO-08 terms with different weighting strategies and at different levels of aggregation. For some occupations, owing to the crossover with employment weights, both green and brown intensity scores can be positive under the ISCO-08 classification scheme. There are also occupations that contain neither green nor brown tasks. Within this framework, each worker is assigned a green and a brown intensity score based on their occupation in order to analyse various outcomes across the whole labour market or economy, such as the share of green jobs over time, innovation, the role of green and brown intensity in transitions between different labour market statuses, and the relationship between greenness of employment and productivity.

### Green and non-green occupations

The definition of green and brown occupations in this working paper applies the metric obtained by mapping the SOC indices to ISCO-08, as outlined in Scholl et al. (2023). As mentioned above, several other studies have taken the same approach. However, Scholl et al. provide the most detailed green and brown intensity task scores at the four-digit ISCO-08 level. Moreover, the authors present employment-weighted measures for the ISCO mapping to address potential double-counting of tasks. This methodology has the advantage of standardization across countries, as the ISCO classification is widely used. Additionally, a task-oriented approach might be a better fit for the purposes of the present report, as we are primarily interested in labour market transitions. Nonetheless, there are some disadvantages to identifying green and non-green occupations using a measure of task intensity. First, tasks evolve, but O\*NET measures are typically static and do not reflect changes occurring within occupations. Second, the crossover from SOC to ISCO requires many occupations to be aggregated because SOC offers more detailed occupational groupings.

Based on the greenness and brownness scores in Scholl et al. (2023), we have classified all 433 occupations at the ISCO-08 four-digit level as green, brown or neutral. All occupations that have a positive green task intensity score (for each weighting) and a zero brown task intensity score are classed as green, while occupations with a positive brown task intensity and zero green intensity are categorized as brown. The remaining occupations are identified as neutral; a significant majority of these do not involve tasks that are either green or brown. A small percentage, on the other hand, score very similarly in terms of task intensity, making them difficult to categorize as either green or brown. For the purposes of our analysis, these occupations have been categorized as neutral.

This classification leaves us with 83 green, 50 brown and 300 neutral occupations at the four-digit level. The table in the appendix gives the complete list of green, brown and neutral jobs. Since the aim of this report is to examine the trajectories of workers into and out of green occupations and to consider whether unemployment insurance may have an impact on the transition to green occupations, a binary categorization is more suitable. Therefore, in the rest of the paper, we have merged the brown and neutral occupations into a single group to give a clearer picture of transitions into and out of green jobs. As can be seen from table 1 below, the environmental properties of occupations are not necessarily related to the industries in which these jobs can be found or the education levels required. For example, environmental engineers, a profession for which tertiary education is needed, and refuse sorters, who usually have few formal qualifications, both fall into the green category because the tasks they fulfil in these occupations contribute to environmental sustainability. It can also be observed that brown and neutral jobs are found right across the industry and education spectrum.

Finally, given the data challenges involved, this operational classification does not allow us to take into account the decent work dimension in defining green jobs, as recommended by the ILO. In particular, it is likely that significant variations in working conditions may be observed in green jobs as defined here, with substantial differences across the two countries under study.

	Positive green intensity	Zero green intensity
Positive brown intensity	<ul> <li>2131 – Biologists, Botanists, Zoologists and Related</li> <li>Professionals</li> <li>7513 – Dairy-products Makers</li> <li>8113 – Well Drillers and Borers and Related</li> <li>Workers</li> <li>9329 – Manufacturing Labourers Not</li> </ul>	2113 – Chemists 3122 – Manufacturing Supervisors 7521– Wood Treaters 8141 – Rubber Products Machine Operators
	Elsewhere Classified 1213 – Policy and Planning Managers	2310 – University and Higher
Zero brown intensity	2133 – Environmental Engineers 7121 – Roofers 9612 – Refuse Sorters	Education Teachers 4227 – Survey and Market Research Interviewers 6223 – Deep-sea Fishery Workers
		9412. – Kitchen Helpers

#### ▶ Table 1. Examples of occupations according to their green and brown intensities

Source: Authors' categorization based on list of occupations developed by Scholl et al. (2023).

# 2 Panel construction and descriptive statistics

### Panel construction and weighting

France and Viet Nam were selected for our empirical analysis of labour market trajectories towards green occupations because their longitudinal labour force survey data, including the four-digit ISCO-08 code for the occupation of each individual surveyed, are available in the ILOSTAT microdata repository.<sup>2</sup> Unfortunately, the repository does not currently include administrative data, such as data from social security registers, which usually form another important source of information for the analysis of labour market trajectories and allow individuals to be followed over longer periods of time than labour force surveys. However, labour force surveys have the advantage of allowing broader coverage of countries' populations, including people in informal employment, whereas individuals registered in administrative databases are usually likely to be in formal employment only. This is particularly useful for Viet Nam, where the informality rate is high.

The labour force survey in France is structured as a rotating panel, which allows respondents to be traced over six consecutive quarters. For example, individuals who had their first interview in the first quarter of 2017 were followed until the second quarter of 2018 and then exited the survey. In order to ensure we have enough observations to examine transitions between green and non-green occupations, we have pooled eight waves of respondents together. Hence, our sample consists of labour force survey respondents who were included over six quarters between 2017 and 2020. Table 2 displays the number of respondents and attrition rates for each wave. As can be seen, attrition rates were broadly similar except for the last wave, consisting of individuals interviewed in the last quarter of 2018 and traced until the first quarter of 2020. This could be due to changes in the data collection process at the beginning of 2020 as a result of social distancing during the COVID-19 pandemic.

For more information on the ILOSTAT microdata repository, see https://ilostat.ilo.org/about/data-collection-and-production/.

Wave	Total number of respondents	Number of respondents followed for six quarters	Attrition rate (%)
2017Q1-2018Q2	22 120	8 759	60.4
2017Q2-2018Q3	21 443	7 807	63.6
2017Q3-2018Q4	20 966	7 600	63.8
2017Q4-2019Q1	22 982	8 220	64.2
2018Q1-2019Q2	22 988	8 389	63.5
2018Q2-2019Q3	20 797	7 920	61.9
2018Q3-2019Q4	21 274	7 649	64
2018Q4-2020Q1	22 268	5 862	73.7

#### ► Table 2. Description of panel data construction for France

Source: Authors' calculations based on data from ILOSTAT microdata repository.

In Viet Nam, a rotating structure for the labour force survey was introduced in 2019. Individuals were traced over two consecutive quarters, left the rotation for the next two quarters, then rejoined for the following two quarters. Although this allows for the possibility of having the same interviewees over six non-consecutive periods, not all the variables required to identify individuals are always available in the Vietnamese data. We were nevertheless able to construct a panel of two waves observed over five quarters, starting from the first and third quarters of 2021 respectively. Table 3 gives respondent numbers and attrition rates for the two waves.<sup>3</sup> The numbers of individuals who participated in all periods and the attrition rates are roughly the same for both. It is worth noting that the duration of the observation period from start to finish is shorter for Viet Nam than for France. For the former, the period was 15 months spread over five quarters, while for the latter it lasted 18 months over six quarters. Additionally, there may be seasonality in the data for Viet Nam, given that initial labour market status is only observed for specific quarters of the year (Q1 and Q3), as opposed to France, where results can be averaged across all quarters of the year. Hence, direct comparisons of the transition rates for the two countries cannot be easily made.

Wave	Total number of respondents	Respondents over	Attrition rate (%)
		five quarters	
2021Q1-2022Q1	328 954	83 761	74.5
2021Q3-2022Q3	325 149	83 774	74.2

#### ▶ Table 3. Description of panel data construction for Viet Nam

Source: Authors' calculations based on data from ILOSTAT microdata repository.

One of the issues with estimating transition probabilities from rotating panels is non-random attrition bias. This report uses two weighting strategies to account for the possibility of such a bias. First, we weighted the transitions and regressions using sampling weights provided by the

Owing to data availability, the period covered for Viet Nam includes the COVID-19 pandemic. When more recent longitudinal data become available, an analytical perspective on the impact of the pandemic on transitions in the labour market in Viet Nam would probably allow some light to be shed on the possible effects of the pandemic on these transitions.

Statistical Offices of France and Viet Nam. The purpose of these weightings is to represent the frequency of each observation in the respective countries' population as a whole. Second, we estimated the attrition probability for various groups of the sample and reweighted every observation using inverse probability weightings. A similar approach has been adopted by other researchers in the literature (Samaniego and Viegelahn 2021; Fallick and Fleischman 2001). To do this, we began by computing the probability of matching the same individual across two periods for each wave using age, sex, level of education, marital status and location as explanatory variables. These probabilities were then used to reweight the observations through an inverse probability weighting procedure.<sup>4</sup> All transition probabilities in the next section are presented using attrition-revised weights.

### Green jobs in France and Viet Nam

Table 4 shows the number and share of green jobs for those workers in the samples for France and Viet Nam who were followed for the entire period under consideration. It can be observed that the majority of workers in both countries are in non-green jobs. In France, 95,942 of the individuals surveyed (approximately 78.5 per cent of the total sample) were employed in occupations that are either brown or neutral. Nevertheless, a significant portion (21.5 per cent) of workers in France work in green jobs, which indicates a noticeable presence of environmentally sustainable occupations within the country's workforce. Our results are in line with other estimates for the proportion of occupations in France that involve green tasks. For example, a recent study has argued that, on average, 23.5 per cent of workers in France are employed in a green occupation, with significant regional variation (OECD 2023). While some of the existing studies report a lower proportion of green employment, such as almost 15 per cent in 2013 (CEDEFOP 2018), it should be noted that their definitions are based on a narrower conceptualization of green occupations.

		Frequency	Share (%)
F	<b>6</b> -1-1-1	25.227	24.5
France	Green	25 337	21.5
	Non-green	95 942	78.5
Viet Nam	Green	62 676	14.9
	Non-green	370 083	85.1

#### ▶ Table 4. Number and share of green jobs among workers in France and Viet Nam

Note: Shares have been estimated using frequency weights.

Source: Authors' calculations based on data from ILOSTAT microdata repository.

In Viet Nam, 370,083 of the individuals surveyed (almost 85 per cent of the total sample) held nongreen jobs, while 62,676 were in occupations considered green. The lower rate of green employment in comparison to France is not surprising, given the disparate levels of economic development. While there are no comparable statistics in the literature for Viet Nam, it has been argued that the demand for green skills is growing in the country. The share of job postings requiring a worker to have at least one green skill increased to 22 per cent in 2023 (Do 2023). Moreover, it has been noted that the presence of green jobs in Viet Nam is expanding in all sectors, not just

The inverse probability weighting procedure employs the propensity score to balance the attributes of respondents who remain in the sample against those of respondents who leave it.

in traditionally green sectors such as renewable energy and environmental protection (Do 2023). This echoes the commitment that Viet Nam made at the twenty-sixth session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, held in 2021, to reduce its net emissions to zero by 2050. Steps towards achieving this objective include, in particular, the Just Energy Transition Partnership signed by Viet Nam in 2022, the aim of which is to support low-emission and climate-resilient development in Viet Nam, underpin the just energy transition and the decarbonization of the country's electricity system and develop new economic opportunities to support the transition towards a net zero future.<sup>5</sup> Furthermore, in November 2023 Viet Nam undertook to become a pathfinder country for the UN Global Accelerator on Jobs and Social Protection for Just Transitions, which aims to accelerate progress towards achieving the Sustainable Development Goals and support the creation of decent jobs, including within the green economy, as well as extending social protection to people who are excluded.<sup>6</sup>

<sup>5</sup> For more information, see https://ec.europa.eu/commission/presscorner/detail/es/statement\_22\_7724. Other countries, such as Indonesia, South Africa and Senegal, have also entered into Just Energy Transition Partnerships.

<sup>6</sup> See https://www.unglobalaccelerator.org/.

# 3 Transitions between green and non-green jobs

### **Transition probabilities in France**

In France, movement between green and non-green employment is characterized by a relatively high degree of inertia: 88 per cent and 89 per cent of people in green and non-green occupations, respectively, were still in the same category six quarters later (see table 5 below). In addition, a substantial proportion of workers in a green job had moved to a non-green job after six quarters (5.5 per cent), which is higher than the proportion of those in a non-green job that transitioned to a green one (1.6 per cent). This might be partly due to the instability associated with green occupations, and it is argued that the innovative nature of many green industries can lead to relatively unstable employment. However, being outside the labour force or unemployed was an outcome more frequently observed after a person has held a non-green occupation than a green one (9.1 and 6.8 per cent, respectively).

On the other hand, the challenges of finding a green job appear to be especially striking for unemployed people in France, a significant proportion of whom – 37.5 per cent – remained unemployed after six quarters. Only a small minority (4.7 per cent) ended up in a green job, while almost one third (31.4 per cent) moved from unemployment to non-green employment. Additionally, 84.1 per cent of individuals who were outside the labour force remained so. Only 1.2 per cent of them became employed in a green occupation, while the rate of transition to a non-green job was 8.7 per cent. Unemployed people and those outside the labour force who were in employment after six quarters rarely found a green occupation. Indeed, within these two populations, the share of green occupations among all individuals in employment after six quarters was 13 and 12.1 per cent, respectively, while green jobs represented 21.5 per cent of all jobs (see table 4 above).<sup>7</sup> This may point to a possible mismatch in terms of skill requirements for green jobs among unemployed people and those outside the labour force, at least for the period under review.<sup>8</sup>

		Situation on the labour market at the end of each wave			
Situation on the labour market at the beginning of each wave	Green	Non-green	Unemployed	Outside the la- bour force	Total
		All			
Green	87.8	5.5	2.1	4.7	100
Non-green	1.6	89.4	2.9	6.2	100
Unemployed	4.7	31.4	37.5	26.5	100
Outside the labour force	1.2	8.7	6.0	84.1	100
Young (15–24)					

#### ▶ Table 5. Transition rates (%) between different occupations and labour market statuses in France

<sup>&</sup>lt;sup>7</sup> The proportion of workers in green occupations who were previously unemployed or outside the labour force has been estimated based on the figures in table 5, corresponding to the following ratios for the respective groups: 4.7/(4.7+31.4) and 1.2/(8.7+1.2).
<sup>8</sup> A recent study for instance has pointed to recruitment challenges in the group groups: 4.7/(4.7+31.4) and 1.2/(8.7+1.2).

<sup>&</sup>lt;sup>8</sup> A recent study, for instance, has pointed to recruitment challenges in the green economy in France in 2020–2021, owing mainly to a mismatch between the skills required by employers and those available among jobseekers (Margontier 2022).

Green	73.4	15.6	5.2	5.8	100
Non-green	3.4	72.9	11.0	13.2	100
Unemployed	5.0	34.0	36.6	25.4	100
Outside the labour force	1.5	11.8	6.3	80.5	100
		Prime-age	e (25–54)		
Green	90.1	5.9	2.0	2.0	100
Non-green	1.7	92.3	2.7	3.2	100
Unemployed	4.8	34.7	37.2	23.3	100
Outside the labour force	2.0	14.4	11.5	72.2	100
		Older (S	55-64)		
Green	82.7	2.2	1.8	13.3	100
Non-green	0.5	83.9	1.6	14.0	100
Unemployed	4.0	15.5	40.3	40.2	100
Outside the labour force	0.04	1.8	2.0	95.8	100
		Wom	nen		
Green	86.4	6.5	2.6	4.5	100
Non-green	0.95	89.4	2.7	7.0	100
Unemployed	2.4	33.9	34.2	29.6	100
Outside the labour force	0.63	9.0	5.8	84.6	100
		Ме	'n		
Green	88.3	5.0	1.9	4.8	100
Non-green	2.3	89.3	3.2	5.2	100
Unemployed	6.7	28.9	40.8	23.4	100
Outside the labour force	2.0	8.2	6.4	83.4	100
	Ed	ucation below	secondary level	1	1
Green	84.9	6.0	2.4	6.9	100
Non-green	0.1	84.3	4.1	10.7	100
Unemployed	2.3	22.4	40.7	34.6	100
Outside the labour force	0.1	5.0	5.3	89.1	100
		Secondary	education	1	1
Green	86.1	5.8	2.0	6.2	100
Non-green	1.4	89.0	3.3	6.3	100
Unemployed	4.9	34.3	36.4	24.5	100
Outside the labour force	1.2	11.9	6.7	80.3	100
	Edu	ucation beyond	secondary level		1
Green	89.9	5.1	2.1	2.9	100
Non-green	2.1	92.4	1.7	3.8	100
Unemployed	8.6	39.5	34.3	17.6	100

Note: Transition probabilities have been estimated using attrition-revised weights.

Source: Authors' calculations based on data from ILOSTAT microdata repository.

For young workers, the likelihood of moving from non-green to green jobs was higher than for other cohorts (3.4 per cent, compared with 1.7 per cent for prime-age workers and 0.5 per cent for older workers), and the differences are statistically significant.<sup>9</sup> However, it should also be noted that younger workers have a probability of 15.6 per cent of switching to a non-green job, suggesting that the observed movements of this population across green and non-green jobs may partly reflect the greater mobility of young workers on the French labour market.<sup>10</sup> Older workers, on average, have lower mobility between labour market statuses, which is not surprising given that they are closer to retirement. Regardless of the initial category considered, the proportion of people in this group who were outside the labour force after six quarters was substantial.

With regard to sex, our findings reveal that, on average, women are less likely than men to stay in a green job or to move into one from another category. This result is consistent with existing projections for the effects of the green transition on the labour market, highlighting the fact that, overall, employment gains associated with the green economy tend to be located in industries that are currently male-dominated (ILO 2018; ILO 2019; ILO and IDB 2020). The shift from green to non-green occupations is higher for female workers in France than for males, at 6.5 per cent compared with 5 per cent, which is statistically significant. It can be also observed that the chances of women becoming unemployed are quite similar for green and non-green job holders, but that the probability of exiting the labour market is higher for female workers in non-green occupations. For male workers in France, the probability of becoming unemployed is slightly higher for those in non-green jobs, while the ratios for men leaving the labour force at the end of six quarters are almost identical for those employed in green and non-green occupations at the start of the observation period. Finally, the proportion of women in non-green jobs who move to inactivity is slightly higher, at 7 per cent, than for men in the same category, which might imply that it is somewhat more difficult for female non-green job holders to remain in the labour force.

The last rows of table 5 show transition rates disaggregated by level of education. As can be seen, the likelihood of a worker with education beyond secondary level moving to a green job is higher across all categories than for a worker with less education, while the rates for moving in the opposite direction are quite similar for all groups. This suggests that formal education assists people in transitioning more smoothly towards the green economy and increases their chances of being employed in a green job. Moreover, a higher share of workers with education beyond secondary level – almost 90 per cent – were still in a green job in the sixth quarter. For individuals with high school diplomas, the figure is around 86 per cent, while for those having not completed secondary education it stands at 85 per cent. In line with our expectations, the proportion of workers in France who become unemployed or exit the labour force is greater, on average, for those with no education beyond secondary level, with the exception of green job holders with high school diplomas. Workers in France with lower levels of education tend to be more likely to remain unemployed or outside the labour force than groups with higher levels of education.

<sup>&</sup>lt;sup>9</sup> The statistical differences among transition probabilities throughout this report were tested using a logistic regression with group dummy variables.

<sup>&</sup>lt;sup>10</sup> For example, previous studies using data for France have found that, regardless of the greenness of the occupations involved, occupational changes are more frequent at the beginning of a worker's career (Lhommeau and Michel 2018).

### **Transition probabilities in Viet Nam**

As can be seen from table 6, the transition probabilities are much higher in Viet Nam for green job holders. While 30.6 per cent moved to non-green jobs and another 4.3 per cent exited the labour force over the course of five non-consecutive quarters, only around 65 per cent of workers with green occupations retained the same status. The high rate of transition to non-green jobs could be a reflection of the large share of non-green occupations in Viet Nam (85.1 per cent), as shown in table 4. For non-green job holders in Viet Nam, mobility was lower: more than 88 per cent remained in a non-green occupation after five quarters, while 6 per cent moved into a green job and another 5.2 per cent left the labour force. The probability of becoming unemployed was low for workers in both green and non-green occupations in Viet Nam, at less than 0.05 per cent for each group. However, consistent with what can be observed in many developing economies, unemployment is a relatively rare situation in Viet Nam, as reflected in the country's fairly low unemployment rate (averaging 2.8 per cent for 2021–2022, according to data from the General Statistics Office of Viet Nam).

It should also be noted that a significant proportion of those who were unemployed – nearly 63 per cent – obtained employment in non-green jobs; 13.6 per cent moved into green economic activities. However, as unemployed workers represent a relatively small share of the population in Viet Nam, movements from unemployment to green occupations were limited in absolute terms. Lastly, a small share (3 per cent) of individuals outside the labour market moved into green occupations, whereas the shift to non-green occupations among this group was higher (22.7 per cent). The majority of individuals in Viet Nam who were outside the labour force tended to remain so for the period under consideration, with only a small percentage of the economically inactive moving into unemployment. Overall, these observations confirm that the absorption capacity of non-green jobs in Viet Nam is relatively high.

	Situation on the labour market at the end of each wave				
Situation on the labour market at the beginning of each wave	Green	Non-green	Unemployed	Outside the la- bour force	Total
		All			
Green	64.8	30.6	0.0	4.3	100
Non-green	6.0	88.6	0.0	5.2	100
Unemployed	13.6	63.1	9.2	14.2	100
Outside the labour force	3.0	22.7	1.0	73.3	100
		Young (1	5-24)		
Green	55.5	37.5	1.0	5.9	100
Non-green	4.0	85.6	0.1	9.8	100
Unemployed	9.6	54.8	16.7	18.9	100
Outside the labour force	2.0	14.7	1.5	82.3	100
Prime-age (25–54)					
Green	65.7	30.4	0.0	3.7	100
Non-green	6.6	89.3	0.0	3.9	100

#### > Table 6. Transition rates (%) between different occupations and labour market statuses in Viet Nam

Unemployed	14.8	66.1	7.9	11.2	100		
Outside the labour force	5.8	37.2	1.3	55.7	100		
	Older (55–64)						
Green	61.5	29.2	0.0	9.1	100		
Non-green	4.2	87.1	0.0	8.7	100		
Unemployed	13.8	61.0	2.5	22.6	100		
Outside the labour force	1.6	17.6	0.1	80.6	100		
	• •	Wom	ien				
Green	53.3	41.0	0.0	5.4	100		
Non-green	3.8	89.7	0.0	6.3	100		
Unemployed	5.3	65.4	9.1	20.2	100		
Outside the labour force	1.7	24.3	0.1	73.1	100		
		Ме	n				
Green	68.0	27.7	0.0	4.0	100		
Non-green	8.4	87.5	0.0	3.9	100		
Unemployed	20.3	61.1	9.3	9.3	100		
Outside the labour force	4.7	20.3	1.3	73.7	100		
	Ed	ucation below	secondary level				
Green	66.8	27.9	0.04	5.0	100		
Non-green	4.4	90.1	0.02	5.3	100		
Unemployed	15.5	64.1	4.6	15.6	100		
Non-employed	2.8	22.6	0.1	73.9	100		
		Secondary e	education				
Green	58.5	36.7	0.0	4.7	100		
Non-green	7.4	87.3	0.0	4.9	100		
Unemployed	8.8	66.4	11.7	13.1	100		
Outside the labour force	2.9	22.7	1.7	72.7	100		
	Edu	ication beyond	secondary level				
Green	67.1	29.9	0.0	2.9	100		
Non-green	10.2	84.5	0.0	5.0	100		
Unemployed	15.7	54.5	18.8	11.0	100		
Outside the labour force	4.3	23.1	1.8	70.8	100		

Note: Transition probabilities have been estimated using attrition-revised weights.

Source: Authors' calculations based on data from ILOSTAT microdata repository.

An analysis by age group shows that, in Viet Nam, the probability of moving from a non-green to a green occupation was higher for prime-age workers (6.6 per cent) than for young workers (4 per cent). As in the case of France, green occupations also seem to be less stable for young workers, with a relatively high share of this age group moving from green to non-green employment (37 per cent). With regard to transitioning out of unemployment, in Viet Nam the prime-age group experienced the highest mobility towards both green and non-green jobs, which might be explained by the advantages this group enjoys in terms of human capital (i.e. having more

experience). Young workers in Viet Nam were more likely to remain outside the labour force by comparison with older workers.

With regard to sex, in Viet Nam, men had a higher likelihood than women of remaining in green occupations (68 per cent compared with almost 53 per cent). Female workers also showed lower rates of mobility from non-green to green jobs for the period in question, while the proportion of women leaving the labour force was greater among both green and non-green job holders, as well as among the unemployed. A fairly high proportion of unemployed men in Viet Nam – 20.3 per cent – succeeded in obtaining green jobs, while the same ratio for unemployed women was slightly over 5 per cent. A sizable share – 20.2 per cent – of female workers who were unemployed at the beginning of the period had ended up leaving the labour force after five quarters. This may indicate that women face greater challenges in finding a green job, potentially signal-ling a need to design green transition policies in the labour market that are more inclusive of women. In terms of the economically inactive population in Viet Nam, differences between the sexes are most visible when it comes to moving into employment, with men having a greater probability of being employed in a green occupation and women more likely to take up a non-green occupation.

In the final part of this section, we examine the transition probabilities in Viet Nam for various education levels. Workers with education beyond secondary level had higher rates of transition to green jobs from every other labour market status in comparison to people with fewer years of schooling. For example, 10.2 per cent of individuals in Viet Nam with education beyond secondary level who were employed in non-green occupations at the beginning of the observation period were working in green occupations after five guarters, while the ratio was 7.4 per cent for workers with high school diplomas and 4.4 per cent for workers who had not completed secondary education; these differences are statistically significant. In addition, among unemployed workers, although a higher share of those with education beyond secondary level remained unemployed or outside the labour force after five quarters (29.8 per cent, compared with 24.8 per cent and 20.2 per cent, respectively, for those with high school diplomas and those who had not completed secondary education), workers who managed to find a job were more often employed in green occupations. Among unemployed workers who had found a job by the end of five guarters, the proportion of green jobs was 22.4 per cent for those with education beyond secondary level, compared with 11.7 per cent and 19.4 per cent, respectively, for those with high school diplomas and those who had not completed secondary education. On the other hand, workers who had not completed secondary education displayed greater stability in non-green occupations.

These findings suggest that education level plays a significant role in occupational transitions and labour market dynamics linked to the greening of the economy in Viet Nam. Higher education seems to contribute to more fluid transitions toward green occupations, while lower levels of education are associated with higher rates of stability in non-green occupations.

# 4 Unemployment benefits, social protection and green transitions in France and Viet Nam

### Unemployment benefits and green transitions in France

As shown in section 3 above, the transition to green jobs from all other statuses (non-green employment, unemployment and being outside the labour force) is substantial, particularly for certain groups. In this section, we examine the relationship between unemployment benefits and the probability of switching to a green job in France. This is based on a question included in the labour force survey asking those registered as jobseekers if they have received unemployment benefit or solidarity unemployment benefit.<sup>11</sup>

Before we move on to our regression analysis, table 7 provides a description of the key characteristics of unemployment benefit receivers in France compared with the rest of the population. It should be noted that the labour force survey question on unemployment benefit does not distinguish between workers who are currently employed and those who are unemployed, and hence includes individuals who have supplementary incomes in the form of unemployment assistance while employed. As can be observed, in terms of sex, marital status, location of residence and sector of employment, there were no major differences between workers who received unemployment assistance and the rest of the population. Regarding age, the share of older workers is higher among those receiving unemployment benefit (19 per cent) than in the sample overall. This can be explained by the fact that a certain amount of contributions and duration of employment are necessary to become eligible for such benefits. Younger workers might find themselves ineligible for assistance when unemployed. Another distinction may be drawn between the groups based on level of education. While almost 26 per cent of unemployment benefit recipients had been educated beyond secondary level, the ratio is around 20 per cent for those not in receipt of the benefit. Once again, this could be due to the prevalence of stable work histories and payment of unemployment insurance contributions among workers with higher levels of education.

<sup>&</sup>lt;sup>11</sup> In the case of France, the provision examined here and identified in the labour force survey consists of "unemployment assistance", which includes both unemployment benefit (dependent on the unemployment insurance contributions paid) and an unemployment solidarity scheme for unemployed people who have exceeded their period of entitlement to unemployment benefit.

		No unemployment	Unemployment benefit
		benefit	receivers
Age	Young (15–24)	18.8	9.5
	Prime-age (25–54)	70.3	71.5
	Older (55–64)	10.9	19.0
Sex	Male	45.4	46.2
	Female	54.6	53.9
Education	Below secondary	31.7	23.9
	Secondary	48.4	50.3
	Above secondary	20.0	25.8
Marital	Not married	72.6	67.5
status	Married	27.4	32.5
Location	Rural	14.7	16.4
	Urban	85.3	83.6

#### > Table 7. Key characteristics of unemployment benefit receivers in France (%)

Note: Shares have been estimated using sampling weights.

Source: Authors' calculations based on data from ILOSTAT microdata repository.

Table 8 gives the logistic regression results for the transition from being unemployed or outside the labour force to being in green employment. Since our analysis seeks to focus on the impact of unemployment benefits on the probability of finding a green job, individuals in employment who reported receiving unemployment benefit are not considered here. These cases include people who had recently found a job and might therefore be less likely to move within the labour market again in the near future. In France, a positive and significant association between receiving unemployment benefit and transitioning into green employment can be observed for individuals who were jobless at the start of the study period. Receipt of unemployment benefit increases the log odds of transitioning to green employment by 0.48 units, and the coefficient is statistically significant at the 1 per cent level. In line with our expectations, this suggests that unemployment assistance may enable unemployed workers to find jobs in the green economy in France, which may be due to better matching. For the category of people initially outside the labour force, receiving unemployment assistance is linked with a rise of 0.18 units in the log odds of transitioning to green employment, but the relationship is not statistically significant. However, it is likely that labour force survey respondents who reported being outside the labour force were either not actively seeking employment or were not available for work due to, for example, training, thereby affecting their likelihood of finding a job.<sup>12</sup> It should be noted that receipt of unemployment benefits also increases the probability of moving from unemployment to a non-green job by 0.66 log units. In France, therefore, unemployment benefits are found to be positively associated with getting a job, for both green and non-green occupations.

<sup>&</sup>lt;sup>12</sup> Those in receipt of French unemployment benefit must perform activities with a view to finding a job or setting up or taking over a business.

	Unemployment	Outside the labour force
Unemployment benefit	0.48***	0.18
	(0.18)	(0.27)
Prime-age (25–54)	-0,30	0.16
	(0.26)	(0.44)
Older (55–64)	-0.69**	-0.93*
	(0.34)	(0.56)
Female	-1.29***	-1.49***
	(0.19)	(0.28)
Secondary education	0.91***	0.30
	(0.24)	(0.33)
Education beyond secondary level	1.60***	1.52***
	(0.26)	(0.33)
Married	0.54***	-0.31
	(0.19)	(0.29)
Urban	0.32	0.38
	(0.25)	(0.41)
Wave FE	Y	Y
No. of observations	3 354	2 402

Table 8. Unemployment benefits and the transition to green employment in France – logistic regression results

Logistic regressions have been estimated using probability weightings.

\*\*\* indicates *p* < 0.01, \*\* indicates *p* < 0.05 and \* indicates *p* < 0.1.

Second rows give standard errors.

Source: Authors' calculations based on data from ILOSTAT microdata repository.

There may be various reasons why unemployment benefit has a positive effect on the likelihood of being employed after a spell of unemployment. Unemployment benefits can, for instance, increase subsequent employment stability because they give job seekers the financial flexibility to reject poor job offers and keep looking for better jobs (Tatsiramos 2014). Moreover, in France, receipt of unemployment benefit is conditional on actively seeking work by means of a personalized employment access project that includes activities carried out by the public employment service. Overall, this unemployment benefit scheme could be particularly useful for finding specific jobs, such as those in the green economy.

However, it should be noted that the results presented here are merely descriptive, with no causal link drawn between receipt of unemployment benefit and the probability of being employed six quarters later. In particular, the estimates may partly reflect biases linked to the "selection" of the population covered by unemployment insurance, who could have characteristics that are not fully taken into account through the control variables introduced into the model. For example, evidence has highlighted the fact that, in France, people who do not claim unemployment benefit are more likely to have short contracts and to have worked for less time than people who do claim this benefit (Hentzgen et al. 2022).

On the other hand, although not the focus of the analysis in this section, our estimates for regression control variables also show interesting patterns that confirm some of the results presented above. For example, being female is associated with a substantial decrease in the log odds of transitioning to green employment across all three employment categories, and these effects are statistically significant at the 1 per cent level. Similarly, higher education raises the probability of transitioning into green jobs in France, particularly for the unemployed and economically inactive. Moreover, being an older worker decreases mobility from unemployment and being outside the labour force into green occupations, which could be due to the reduced opportunities this group has after losing a job or leaving the labour force.

### Social protection and green transitions in Viet Nam

The labour force survey in Viet Nam does not feature a specific question that can be used as a proxy for receipt of unemployment benefit. However, it does include a variable that aims to measure insurance coverage. In table 9 we give figures for the key characteristics of workers in Viet Nam who have social insurance and those who do not. There are clear differences between the two groups in terms of age, education, residence, working arrangements, informality and earnings. Marital status is quite similar between the groups. Although there is some variation with regard to sex, the groups still have comparable distributions. In terms of age, it can be seen that a significant proportion of workers in Viet Nam who have social insurance are prime-aged, while 18 per cent of those with no social insurance are older individuals. This hints at the challenges that older workers in Viet Nam face in terms of securing social security coverage. Viet Nam presents an uncommon case in that outflow rates from social insurance are quite high. This may be explained in part by the fact that workers in Viet Nam can, at any point in their career, suspend their social insurance contributions for 12 months and subsequently withdraw the entirety of their (and their employers') social insurance contributions up to that date as a lumpsum payment. This could contribute to creating conditions that push workers to leave social insurance schemes during their careers, leading to higher coverage rates for young workers than for older workers.<sup>13</sup> Similarly, the majority of people without social security have not completed secondary education and reside in rural areas, which suggests that a substantial proportion of them might be agricultural workers.

There is no single indicator for understanding the quality of jobs. We utilize informality, part-time work and earnings as proxies. In Viet Nam, a very significant number of workers without social security are in the informal sector, measured by unit of production. While more than 83 per cent of respondents had no social protection and worked in an informal enterprise or were engaged in household production, the ratio was 52.5 per cent for those with social security. There is also a

<sup>&</sup>lt;sup>13</sup> In 2019, the coverage rate for the cohort aged 25–29 was as high as 58.5 per cent for women and 38.6 per cent for men, while the coverage rate for both sexes for any cohort above the age of 40 was below 30 per cent (and below 15 per cent for all cohorts above 50 years old). For more information, see https://www.ilo.org/hanoi/Whatwedo/Publications/WCMS\_819801/lang--en/index.htm.

considerable difference with regard to part-time employment among these groups: 28 per cent of those without social protection were part-time workers. Finally, average monthly earnings for the two groups are quite different, at 6,272,596 Vietnamese dong (approximately US\$ 246) for individuals without social security and 8,106,764 dong (nearly US\$ 318) for the rest. All of these factors suggest that the quality of jobs in Viet Nam tends to be lower among people who are not covered by social benefits.

		No social insurance	Social insurance
Age	Young (15–24)	9.2	9.0
	Prime-age (25–54)	72.6	87.3
	Older (55–64)	18.3	3.6
Sex	Male	54.9	47.0
	Female	45.1	53.0
Education	Below secondary	71.3	21.8
	Secondary	24.1	31.3
	Above secondary	4.6	46.8
Marital status	Not married	21.1	22.4
	Married	78.9	77.6
Location	Rural	63.8	41.4
	Urban	36.2	58.6
Working	Full-time	72.0	85.7
arrangement	Part-time	28.0	14.3
Informality	Formal employment	16.4	47.5
	Informal employment	83.6	52.5
Earnings (mean)		6 272 596 dong	8 106 764 dong

#### ► Table 9. Key characteristics of workers in Viet Nam with social protection (%)

Note: Shares have been estimated using sampling weights.

Source: Authors' calculations based on data from ILOSTAT microdata repository.

While the labour force survey in Viet Nam does not directly identify individuals who are specifically covered by unemployment insurance, the use of administrative data from Viet Nam Social Security (VSS) for the year 2019 makes it possible to compare the demographic profiles of those individuals recorded as social insurance beneficiaries in the survey with unemployment insurance contributors registered by VSS. Among the latter group, the proportion of young people was slightly higher (34 per cent were aged 15 to 24, according to VSS data) than among the social insurance beneficiaries, while the proportion of prime-age workers was lower (65 per cent). This could be partly because the young people interviewed for the labour market survey might be less aware of their social insurance coverage than those with more labour market experience, which would not be reflected in the administrative data. On the other hand, the distribution of

unemployment insurance contributors by sex is exactly the same as that of social insurance contributors in the labour force survey (47 per cent female in both cases).

Since the social insurance question is asked only of people who are currently employed, it is not possible to analyse the relationship between social insurance and the transition into green occupations for people who were unemployed or outside the labour force. As previously shown, education plays an important role in transitioning to green jobs, and there are fewer individuals with education above secondary level who are not covered by social security. Hence, we have disaggregated the relationship between receiving social benefits and moving into green jobs by level of education. Table 10 presents the results of logistic regressions across three educational categories. The link between social insurance and the shift to a green occupation varies substantially in Viet Nam by level of schooling. Our results indicate that, for less educated workers, social insurance is negatively and significantly correlated with moving into a green job from a non-green job. In contrast, social protection increases the likelihood of transitioning into green employment for respondents with education above secondary level. In part, these results suggest that less educated people, once in a job with social security, tend to keep it.

Among the control variables, being female significantly reduces the likelihood of moving to a green occupation in Viet Nam, regardless of educational level. The magnitude of the coefficient ranges from -0.58 in the secondary education category to -1.1 in tertiary education, but it is significant in all cases at a 1 per cent confidence interval. Part-time employment is positively and significantly associated with green employment transitions for people who have not completed secondary education. Informality reduces the likelihood of moving into a green job, but the coefficient is not significant for the least educated group. Earnings, on the other hand, are positively and significantly associated with green employment, and higher wages allow workers to transition from a non-green job to a green job more easily.

	Below secondary	Secondary	Above secondary
Social protection	-0.47***	-0.17**	0.22**
	(0.11)	(0.08)	(0.10)
Prime-age	0.26*	0.36**	0.52**
	(0.13)	(0.14)	(0.21)
Older	-0.06	0.06	0.58**
	(0.15)	(0.18)	(0.27)
Female	-0.65***	-0.58***	-1.10***
	(0.06)	(0.07)	(0.08)
Married	-0.07	0.03	0.00
	(0.08)	(0.09)	(0.10)
Urban	0.19***	0.00	0.36***
	(0.06)	(0.06)	(0.08)
Informal	-0.10	-0.15**	-0.16*
	(0.08)	(0.07)	(0.09)
Part-time	0.30***	-0.06	-0.03
	(0.06)	(0.09)	(0.10)
Earnings (ln)	0.08*	0.33***	0.17**
	(0.04)	(0.06)	(0.08)
Wave FE	Y	Y	Y
Industry	Y	Y	Y
No. of observations	29 956	14 379	9 271

Table 10. Social protection and the transition to green employment from non-green employment in Viet Nam by educational level – logistic regression results

Logistic regressions have been estimated using probability weights.

\*\*\* indicates p < 0.01, \*\* indicates p < 0.05 and \* indicates p < 0.1.

Second rows represent standard errors.

Source: Authors' calculations based on data from ILOSTAT microdata repository.

## Conclusion

The transition to green occupations is considered a key strategy in responding to climate change and promoting ecological resilience. However, the shift towards a green economy entails both the creation and the destruction of jobs, impacting labour markets worldwide. In this paper, we first defined green jobs, highlighting the use of tasks as a basis for estimating the "greenness" of occupations. We then examined rates of transition to green occupations in France and Viet Nam overall and for different groups of workers. Our findings reveal that in France, 21.5 per cent of workers are engaged in green occupations, while the majority, 78.5 per cent, continue to work in non-green jobs. This aligns with existing studies indicating the prevalence of green employment in the country. Viet Nam has a lower proportion of green jobs, with only 15 per cent of workers holding positions in environmentally sustainable occupations.

With regard to green transitions, we estimate that in France one in ten workers in green or nongreen occupations are still in the same job category six quarters later and that the transition to green jobs from non-green ones is limited, with only 1.6 per cent of workers making such a shift, while the share of workers moving from a green job to a non-green one is 5.5 per cent. Furthermore, it seems that a relatively small proportion of people who are unemployed or outside the labour force will have moved into a green occupation after six quarters. Younger workers exhibit higher mobility, especially from non-green to green jobs. Sex and education influence these transitions, with women and workers with lower levels of education facing unique challenges in retaining or shifting to green jobs. The impact of education is especially pronounced, which suggests that investment in skills and education may foster green labour market transitions.

On the other hand, we have found that only 65 per cent of workers with green jobs in Viet Nam remain in the same category five quarters later, but that the shift from non-green to green jobs appears slightly higher than in France, with 6 per cent making such a transition. In comparison to prime-age workers, the share of young workers transitioning from non-green to green occupations is smaller, and women in Viet Nam generally face more significant challenges in transitioning to green jobs than men. Even though fewer than 4 per cent of female workers switch to green occupations from non-green ones, the ratio is more than double that of their male counterparts. Education also plays a substantial role, with more educated individuals more likely to move to a green occupation than the rest of the population.

In this paper we have also analysed the role of social protection systems, including unemployment insurance, in supporting and promoting green transition policies. Through the use of regression techniques, we conclude that unemployed individuals receiving unemployment benefits in France show a positive and statistically significant association with getting a green job. This points towards the relevance of social protection and especially unemployment assistance, in the French context, in facilitating green transitions. Workers with social insurance registration in Viet Nam display diverse patterns with regard to moving from non-green to green jobs, depending on their level of education. While having a job with social protection reduces the likelihood that less educated workers will move into a green job, it seems to have the opposite effect for individuals with education beyond secondary level. For this latter group, social protection is associated with a higher likelihood of transitioning to a green occupation.

It is worth underlining that several avenues for future research could be explored. For example, as the notion of decent work should be encompassed in any definition of green jobs, further research could focus on analysing working conditions in green occupations, including whether the transition from a non-green to a green job is associated with improvements in terms of wages, working hours and job stability. In addition, the use of complementary microdata could certainly help to fine-tune the findings of the present paper. For instance, the availability of longitudinal social security data, including detailed information on each individual's social protection scheme, employment status and occupation, would make it possible to examine labour market trajectories beyond the horizon usually provided by labour force surveys (five or six quarters) and to link each of these trajectories to the precise nature of the social protection received. Finally, extending the scope of the research to countries with different employment insurance and social protection systems would allow further investigation into the role of social protection in accelerating and facilitating just transitions.

# Annex

#### Classification of ISCO-08 occupations by "greenness"

Code	Name	Green	Brown	Neutral
1111	Legislators			×
1112	Senior Government Officials	×		
1113	Traditional Chiefs and Heads of Villages	×		
1114	Senior Officials of Special-interest Organizations	×		
1120	Managing Directors and Chief Executives	×		
1211	Finance Managers			×
1212	Human Resource Managers			×
1213	Policy and Planning Managers	×		
1219	Business Services and Administration Managers Not Elsewhere Classified	×		
1221	Sales and Marketing Managers	×		
1222	Advertising and Public Relations Managers			×
1223	Research and Development Managers	×		
1311	Agricultural and Forestry Production Managers			×
1312	Aquaculture and Fisheries Production Managers			×
1321	Manufacturing Managers	×		
1322	Mining Managers	×		
1323	Construction Managers	×		
1324	Supply, Distribution and Related Managers	×		
1330	Information and Communications Technology Service Managers			×
1341	Child Care Service Managers			×
1342	Health Service Managers			×
1343	Aged Care Service Managers	×		
1344	Social Welfare Managers			×
1345	Education Managers			×
1346	Financial and Insurance Services Branch Managers	×		
1349	Professional Services Managers Not Elsewhere Classified	×		
1411	Hotel Managers			×
1412	Restaurant Managers			×
1420	Retail and Wholesale Trade Managers	×		
1431	Sports, Recreation and Cultural Centre Managers	×		
1439	Services Managers Not Elsewhere Classified	×		
2111	Physicists and Astronomers			×

2112	Meteorologists	×		
2113	Chemists		×	
2114	Geologists and Geophysicists	×		
2120	Mathematicians, Actuaries and Statisticians			×
2131	Biologists, Botanists, Zoologists and Related Professionals			×
2132	Farming, Forestry and Fisheries Advisers	×		
2133	Environmental Protection Professionals	×		
2141	Industrial and Production Engineers			×
2142	Civil Engineers	×		
2143	Environmental Engineers	×		
2144	Mechanical Engineers	×		
2145	Chemical Engineers		×	
2146	Mining Engineers, Metallurgists and Related Professionals		×	
2149	Engineering Professionals Not Elsewhere Classified	×		
2151	Electrical Engineers	×		
2152	Electronics Engineers	×		
2153	Telecommunications Engineers	×		
2161	Building Architects	×		
2162	Landscape Architects	×		
2163	Product and Garment Designers			×
2164	Town and Traffic Planners	×		
2165	Cartographers and Surveyors			×
2166	Graphic and Multimedia Designers			×
2211	Generalist Medical Practitioners			×
2212	Specialist Medical Practitioners			×
2221	Nursing Professionals			×
2222	Midwifery Professionals			×
2230	Traditional and Complementary Medicine Professionals			×
2240	Paramedical Practitioners			×
2250	Veterinarians			×
2261	Dentists			×
2262	Pharmacists			×
2263	Environmental and Occupational Health and Hygiene Professionals			×
2264	Physiotherapists			×
2265	Dieticians and Nutritionists			×
2266	Audiologists and Speech Therapists			×
2267	Optometrists and Ophthalmic Opticians			×
2269	Health Professionals Not Elsewhere Classified			×
2310	University and Higher Education Teachers			×
2320	Vocational Education Teachers			×

2330	Secondary Education Teachers		×
2341	Primary School Teachers		×
2342	Early Childhood Educators		×
2351	Education Methods Specialists		×
2352	Special Needs Teachers		×
2353	Other Language Teachers		×
2354	Other Music Teachers		×
2355	Other Arts Teachers		×
2356	Information Technology Trainers	×	
2359	Teaching Professionals Not Elsewhere Classified		×
2411	Accountants		×
2412	Financial and Investment Advisers	×	
2413	Financial Analysts	×	
2421	Management and Organization Analysts	×	
2422	Policy Administration Professionals	×	
2423	Personnel and Careers Professionals		×
2424	Training and Staff Development Professionals	×	
2431	Advertising and Marketing Professionals		×
2432	Public Relations Professionals	×	
2433	Technical and Medical Sales Professionals (excluding ICT)	×	
2434	Information and Communications Technology Sales Professionals	×	
2511	Systems Analysts		×
2512	Software Developers		×
2513	Web and Multimedia Developers		×
2514	Applications Programmers		×
2519	Software and Applications Developers and Analysts Not Elsewhere Classified	×	
2521	Database Designers and Administrators		×
2522	Systems Administrators		×
2523	Computer Network Professionals		×
2529	Database and Network Professionals Not Elsewhere Classified	×	
2611	Lawyers		×
2612	Judges		×
2619	Legal Professionals Not Elsewhere Classified	×	
2621	Archivists and Curators		×
2622	Librarians and Related Information Professionals		×
2631	Economists	×	
2632	Sociologists, Anthropologists and Related Professionals		×
2633	Philosophers, Historians and Political Scientists	×	
2634	Psychologists		×

2635	Social Work and Counselling Professionals			×
2636	Religious Professionals			×
2641	Authors and Related Writers			×
2642	Journalists	×		
2643	Translators, Interpreters and Other Linguists	×		
2651	Visual Artists			×
2652	Musicians, Singers and Composers			×
2653	Dancers and Choreographers			×
2654	Film, Stage and Related Directors and Producers			×
2655	Actors			×
2656	Announcers on Radio, Television and Other Media			×
2659	Creative and Performing Artists Not Elsewhere Classified			×
3111	Chemical and Physical Science Technicians			×
3112	Civil Engineering Technicians	×		
3113	Electrical Engineering Technicians	×		
3114	Electronics Engineering Technicians	×		
3115	Mechanical Engineering Technicians	×		
3116	Chemical Engineering Technicians	×		
3117	Mining and Metallurgical Technicians	×		
3118	Draughtspersons			×
3119	Physical and Engineering Science Technicians Not Elsewhere Classified	×		
3121	Mining Supervisors			×
3122	Manufacturing Supervisors		×	
3123	Construction Supervisors			×
3131	Power Production Plant Operators			×
3132	Incinerator and Water Treatment Plant Operators			×
3133	Chemical Processing Plant Controllers		×	
3134	Petroleum and Natural Gas Refining Plant Operators		×	
3135	Metal Production Process Controllers		×	
3139	Process Control Technicians Not Elsewhere Classified			×
3141	Life Science Technicians (excluding Medical)	×		
3142	Agricultural Technicians	×		
3143	Forestry Technicians			×
3151	Ships' Engineers			×
3152	Ships' Deck Officers and Pilots			×
3153	Aircraft Pilots and Related Associate Professionals			×
3154	Air Traffic Controllers			×
3155	Air Traffic Safety Electronics Technicians	×		
3211	Medical Imaging and Therapeutic Equipment Technicians			×
3212	Medical and Pathology Laboratory Technicians			×

3213	Pharmaceutical Technicians and Assistants		×
3214	Medical and Dental Prosthetic Technicians		×
3221	Nursing Associate Professionals		×
3222	Midwifery Associate Professionals		×
3230	Traditional and Complementary Medicine Associate Professionals		×
3240	Veterinary Technicians and Assistants		×
3251	Dental Assistants and Therapists		×
3252	Medical Records and Health Information Technicians		×
3253	Community Health Workers		×
3254	Dispensing Opticians		×
3255	Physiotherapy Technicians and Assistants		×
3256	Medical Assistants		×
3257	Environmental and Occupational Health Inspectors and Associates	×	
3258	Ambulance Workers		×
3259	Health Associate Professionals Not Elsewhere Classified		×
3311	Securities and Finance Dealers and Brokers		×
3312	Credit and Loans Officers		×
3313	Accounting Associate Professionals		×
3314	Statistical, Mathematical and Related Associate Professionals		×
3315	Valuers and Loss Assessors		×
3321	Insurance Representatives		×
3322	Commercial Sales Representatives	×	
3323	Buyers	×	
3324	Trade Brokers		×
3331	Clearing and Forwarding Agents	×	
3332	Conference and Event Planners		×
3333	Employment Agents and Contractors		×
3334	Real Estate Agents and Property Managers		×
3339	Business Services Agents Not Elsewhere Classified	×	
3341	Office Supervisors		×
3342	Legal Secretaries		×
3343	Administrative and Executive Secretaries		×
3344	Medical Secretaries		×
3351	Customs and Border Inspectors	×	
3352	Government Tax and Excise Officials		×
3353	Government Social Benefits Officials	×	
3354	Government Licensing Officials	×	
3355	Police Inspectors and Detectives		×
3359	Government Regulatory Associate Professionals Not Elsewhere Classified		×
3411	Legal and Related Associate Professionals		×

3412	Social Work Associate Professionals	×
3413	Religious Associate Professionals	×
3421	Athletes and Sports Players	×
3422	Sports Coaches, Instructors and Officials	×
3423	Fitness and Recreation Instructors and Programme Leaders	×
3431	Photographers	×
3432	Interior Designers and Decorators	×
3433	Gallery, Museum and Library Technicians	×
3434	Chefs	×
3435	Other Artistic and Cultural Associate Professionals	×
3511	Information and Communications Technology Operations Technicians	×
3512	Information and Communications Technology User Support Technicians	×
3513	Computer Network and Systems Technicians	×
3514	Web Technicians	×
3521	Broadcasting and Audio-visual Technicians	×
3522	Telecommunications Engineering Technicians ×	
4110	General Office Clerks	×
4120	Secretaries (general)	×
4131	Typists and Word Processing Operators	×
4132	Data Entry Clerks	×
4211	Bank Tellers and Related Clerks	×
4212	Bookmakers, Croupiers and Related Gaming Workers	×
4213	Pawnbrokers and Money-lenders	×
4214	Debt Collectors and Related Workers	×
4221	Travel Consultants and Clerks	×
4222	Contact Centre Information Clerks	×
4223	Telephone Switchboard Operators	×
4224	Hotel Receptionists	×
4225	Inquiry Clerks	×
4226	Receptionists (general)	×
4227	Survey and Market Research Interviewers	×
4229	Client Information Workers Not Elsewhere Classified	×
4311	Accounting and Bookkeeping Clerks	×
4312	Statistical, Finance and Insurance Clerks	×
4313	Payroll Clerks	×
4321	Stock Clerks ×	
4322	Production Clerks	×
4323	Transport Clerks	×
4411	Library Clerks	×
4412	Mail Carriers and Sorting Clerks	×

4413	Coding, Proofreading and Related Clerks	×
4414	Scribes and Related Workers	×
4415	Filing and Copying Clerks	×
4416	Personnel Clerks	×
4419	Clerical Support Workers Not Elsewhere Classified	×
5111	Travel Attendants and Travel Stewards	×
5112	Transport Conductors	×
5113	Travel Guides	×
5120	Cooks	×
5131	Waiters	×
5132	Bartenders	×
5141	Hairdressers	×
5142	Beauticians and Related Workers	×
5151	Cleaning and Housekeeping Supervisors in Offices, Hotels and Other Establishments	×
5152	Domestic Housekeepers	×
5153	Building Caretakers	×
5161	Astrologers, Fortune-tellers and Related Workers	×
5162	Companions and Valets	×
5163	Undertakers and Embalmers	×
5164	Pet Groomers and Animal Care Workers	×
5165	Driving Instructors	×
5169	Personal Services Workers Not Elsewhere Classified	×
5211	Stall and Market Salespersons	×
5212	Street Food Salespersons	×
5221	Shopkeepers ×	
5222	Shop Supervisors	×
5223	Shop Sales Assistants	×
5230	Cashiers and Ticket Clerks	×
5241	Fashion and Other Models	×
5242	Sales Demonstrators	×
5243	Door-to-door Salespersons	×
5244	Contact Centre Salespersons	×
5245	Service Station Attendants	×
5246	Food Service Counter Attendants	×
5249	Sales Workers Not Elsewhere Classified	×
5311	Child Care Workers	×
5312	Teachers' Aides	×
5321	Health Care Assistants	×
5322	Home-based Personal Care Workers	×
5329	Personal Care Workers in Health Services Not Elsewhere Classified	×

5411	Fire Fighters			×
5412	Police Officers			×
5413	Prison Guards			×
5414	Security Guards			×
5419	Protective Services Workers Not Elsewhere Classified			×
6111	Field Crop and Vegetable Growers			×
6112	Tree and Shrub Crop Growers			×
6113	Gardeners, Horticultural and Nursery Growers			×
6114	Mixed Crop Growers			×
6121	Livestock and Dairy Producers			×
6122	Poultry Producers			×
6123	Apiarists and Sericulturists			×
6129	Animal Producers Not Elsewhere Classified			×
6130	Mixed Crop and Animal Producers			×
6210	Forestry and Related Workers		×	
6221	Aquaculture Workers			×
6222	Inland and Coastal Waters Fishery Workers			×
6223	Deep-sea Fishery Workers			×
6224	Hunters and Trappers			×
6310	Subsistence Crop Farmers			×
6320	Subsistence Livestock Farmers			×
6330	Subsistence Mixed Crop and Livestock Farmers			×
6340	Subsistence Fishers, Hunters, Trappers and Gatherers			×
7111	House Builders	×		
7112	Bricklayers and Related Workers		×	
7113	Stonemasons, Stone Cutters, Splitters and Carvers			×
7114	Concrete Placers, Concrete Finishers and Related Workers			×
7115	Carpenters and Joiners			×
7119	Building Frame and Related Trades Workers Not Elsewhere Classified	×		
7121	Roofers	×		
7122	Floor Layers and Tile Setters			×
7123	Plasterers			×
7124	Insulation Workers			×
7125	Glaziers			×
7126	Plumbers and Pipe Fitters	×		
7127	Air Conditioning and Refrigeration Mechanics	×		
7131	Painters and Related Workers			×
7132	Spray Painters and Varnishers		×	
7133	Building Structure Cleaners			×
7211	Metal Moulders and Coremakers		×	

7212	Welders and Flame Cutters			×
7213	Sheet Metal Workers			×
7214	Structural Metal Preparers and Erectors			×
7215	Riggers and Cable Splicers			×
7221	Blacksmiths, Hammersmiths and Forging Press Workers		×	
7222	Toolmakers and Related Workers		×	
7223	Metal Working Machine Tool Setters and Operators			×
7224	Metal Polishers, Wheel Grinders and Tool Sharpeners		×	
7231	Motor Vehicle Mechanics and Repairers	×		
7232	Aircraft Engine Mechanics and Repairers			×
7233	Agricultural and Industrial Machinery Mechanics and Repairers			×
7234	Bicycle and Related Repairers			×
7311	Precision-instrument Makers and Repairers			×
7312	Musical Instrument Makers and Tuners			×
7313	Jewellery and Precious Metal Workers			×
7314	Potters and Related Workers		×	
7315	Glass Makers, Cutters, Grinders and Finishers		×	
7316	Sign Writers, Decorative Painters, Engravers and Etchers			×
7317	Handicraft Workers in Wood, Basketry and Related Materials			×
7318	Handicraft Workers in Textile, Leather and Related Materials			×
7319	Handicraft Workers Not Elsewhere Classified			×
7321	Pre-press Technicians			×
7322	Printers			×
7323	Print Finishing and Binding Workers			×
7411	Building and Related Electricians	×		
7412	Electrical Mechanics and Fitters		×	
7413	Electrical Line Installers and Repairers		×	
7421	Electronics Mechanics and Servicers		×	
7422	Information and Communications Technology Installers and Servicers			×
7511	Butchers, Fishmongers and Related Food Preparers		×	
7512	Bakers, Pastry-cooks and Confectionery Makers			×
7513	Dairy Products Makers			×
7514	Fruit, Vegetable and Related Preservers		×	
7515	Food and Beverage Tasters and Graders			×
7516	Tobacco Preparers and Tobacco Products Makers		×	
7521	Wood Treaters		×	
7522	Cabinet-makers and Related Workers		×	
7523	Woodworking Machine Tool Setters and Operators		×	
7531	Tailors, Dressmakers, Furriers and Hatters			×
7532	Garment and Related Patternmakers and Cutters		×	

7533	Sewing, Embroidery and Related Workers	×	
7534	Upholsterers and Related Workers	×	
7535	Pelt Dressers, Tanners and Fellmongers		×
7536	Shoemakers and Related Workers		×
7541	Underwater Divers		×
7542	Shotfirers and Blasters	×	
7543	Product Graders and Testers (except Foods and Beverages) ×		
7544	Fumigators and Other Pest and Weed Controllers		×
7549	Craft and Related Workers not Elsewhere Classified		×
8111	Miners and Quarriers		×
8112	Mineral and Stone Processing Plant Operators	×	
8113	Well Drillers and Borers and Related Workers		×
8114	Cement, Stone and Other Mineral Products Machine Operators		×
8121	Metal Processing Plant Operators	×	
8122	Metal Finishing, Plating and Coating Machine Operators	×	
8131	Chemical Products Plant and Machine Operators		×
8132	Photographic Products Machine Operators		×
8141	Rubber Products Machine Operators	×	
8142	Plastic Products Machine Operators	×	
8143	Paper Products Machine Operators	×	
8151	Fibre Preparing, Spinning and Winding Machine Operators	×	
8152	Weaving and Knitting Machine Operators	×	
8153	Sewing Machine Operators		×
8154	Bleaching, Dyeing and Fabric Cleaning Machine Operators	×	
8155	Fur and Leather Preparing Machine Operators		×
8156	Shoemaking and Related Machine Operators		×
8157	Laundry Machine Operators		×
8159	Textile, Fur and Leather Products Machine Operators Not Elsewhere Classified		×
8160	Food and Related Products Machine Operators	×	
8171	Pulp and Papermaking Plant Operators	×	
8172	Wood Processing Plant Operators	×	
8181	Glass and Ceramics Plant Operators	×	
8182	Steam Engine and Boiler Operators		×
8183	Packing, Bottling and Labelling Machine Operators	×	
8189	Stationary Plant and Machine Operators Not Elsewhere Classified	×	
8211	Mechanical Machinery Assemblers ×		
8212	Electrical and Electronic Equipment Assemblers		×
8219	Assemblers Not Elsewhere Classified		×
8311	Locomotive Engine Drivers	×	
8312	Railway Brake, Signal and Switch Operators		×

8321	Motorcycle Drivers			×
8322	Car, Taxi and Van Drivers			×
8331	Bus and Tram Drivers			×
8332	Heavy Truck and Lorry Drivers	×		
8341	Mobile Farm and Forestry Plant Operators			×
8342	Earthmoving and Related Plant Operators		×	
8343	Crane, hoist and related plant operators		×	
8344	Lifting Truck Operators			×
8350	Ships' Deck Crews and Related Workers			×
9111	Domestic Cleaners and Helpers			×
9112	Cleaners and Helpers in Offices, Hotels and Other Establishments			×
9121	Hand Launderers and Pressers			×
9122	Vehicle Cleaners			×
9123	Window Cleaners			×
9129	Other Cleaning Workers		×	
9211	Crop Farm Labourers			×
9212	Livestock Farm Labourers			×
9213	Mixed Crop and Livestock Farm Labourers			×
9214	Garden and Horticultural Labourers			×
9215	Forestry Labourers			×
9216	Fishery and Aquaculture Labourers			×
9311	Mining and Quarrying Labourers		×	
9312	Civil Engineering Labourers			×
9313	Building Construction Labourers	×		
9321	Hand Packers			×
9329	Manufacturing Labourers Not Elsewhere Classified			×
9331	Hand and Pedal Vehicle Drivers			×
9332	Drivers of Animal-drawn Vehicles and Machinery			×
9333	Freight Handlers			×
9334	Shelf Fillers			×
9411	Fast Food Preparers			×
9412	Kitchen Helpers			×
9510	Street and Related Service Workers			×
9520	Street Vendors (excluding Food)			×
9611	Garbage and Recycling Collectors	×		
9612	Refuse Sorters	×		
9613	Sweepers and Related Labourers			×
9621	Messengers, Package Deliverers and Luggage Porters			×
9622	Odd Job Persons	×		
9623	Meter Readers and Vending-machine Collectors		×	

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9624	Water and Firewood Collectors	×
9629	Elementary Workers Not Elsewhere Classified	×
Source: Bas	ed on Scholl et al. 2023.	

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### Advancing social justice, promoting decent work

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#### **Contact details**

Research Department (RESEARCH)

International Labour Organization Route des Morillons 4 1211 Geneva 22 Switzerland T +41 22 799 6530 research@ilo.org www.ilo.org/research



