

# Will labour shortages and skills mismatches throw sand in the gears of the green transition in Belgium?

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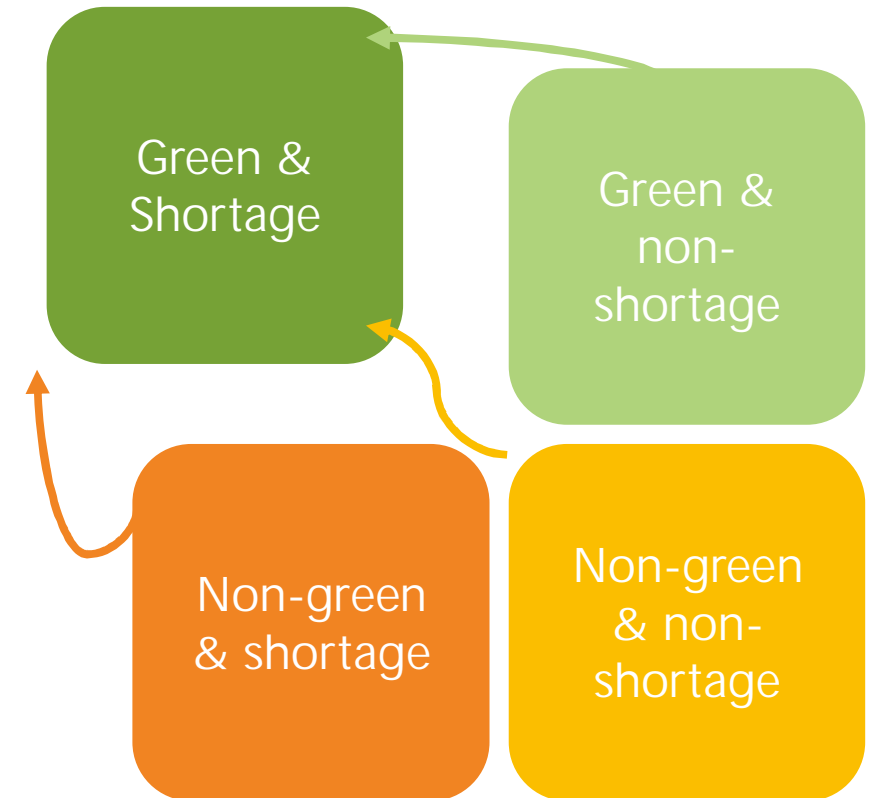


# Could labour shortages hamper the transition to a decarbonised economy?

- National Railway Company of Belgium (09/2024) :  
*'Despite extensive efforts to recruit in a complicated job market - especially in Flanders and Brussels - there will not be enough train drivers in December 2024 to implement the envisaged transport plan'.*
- Locomotive engine driver is a Green Shortage Job
  - How large is the share of these jobs, and what are their defining features?
  - Who transitions into these occupations?
  - Are skills mismatches a key impediment?

# Motivation of the paper

- Labour transitions to green jobs and/or jobs in shortage
  - Growing demand for green jobs (e.g., locomotive engine drivers).
  - Labour shortages are a bottleneck for production and investment in green sectors.
  - Labour reallocation more than job creation (Job-to-job and unemployment/inactivity-to-job)
- The Belgian case is well-suited:
  - High labour shortages (1<sup>st</sup> in the EU)
  - Static labour market (7<sup>th</sup> in the EU)
  - High inactivity rate (5<sup>th</sup> in the EU)



# Contribution to the literature

Our paper is aligned with the following literature:

- Green job characterisation  
(i.a. Vona et al. 2018, Bowen et al. 2018, Valero et al. 2021, OECD 2023)  
and transitions to green jobs  
(EBRD 2023, Barslund et al. 2024, Orsetta et al. 2024, Curtis et al. 2024)
- Causes and consequences of labour shortages  
(i.a. Green et al. 1998, Frohm 2021, Groiss and Sondermann 2024)
- The role of job-related green skills  
(Vona et al. 2015, Dierdorff et al. 2011)

The contribution of our paper is threefold:

- Identification of green shortage jobs
- Focus on transitions
- Evaluation of the role of skills distance

# Empirical strategy

## Identifying the transitions to green shortage jobs



Examples of jobs for the different categories :

Green shortage	Locomotive engine driver, electrician, civil engineering technician
Green non-shortage	Incinerator and water treatment plant operator, architect
Non-green shortage	Secondary education teacher, nurse
Non-green non-shortage	General office clerk, restaurant manager

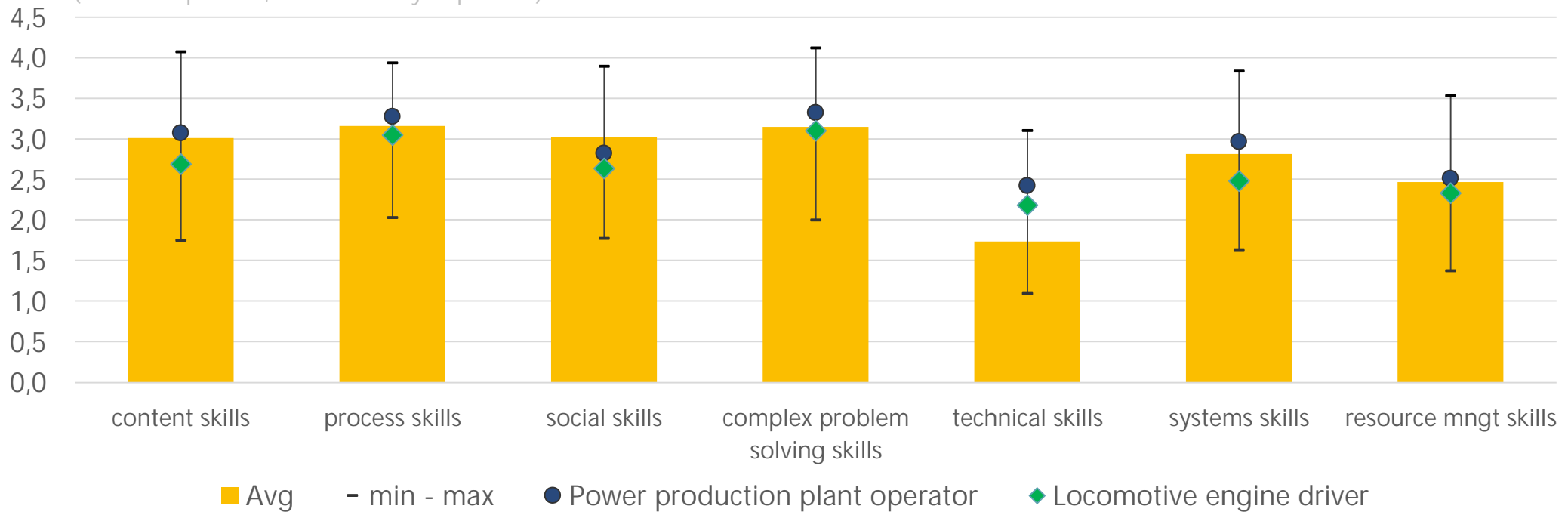
# Empirical strategy

## Occupation-related skills and skills distance

- Skills = *developed capacities that either facilitate learning and the rapid acquisition of knowledge or enhance the performance of tasks across various jobs*

### Importance score by category of skills for the Belgian workers

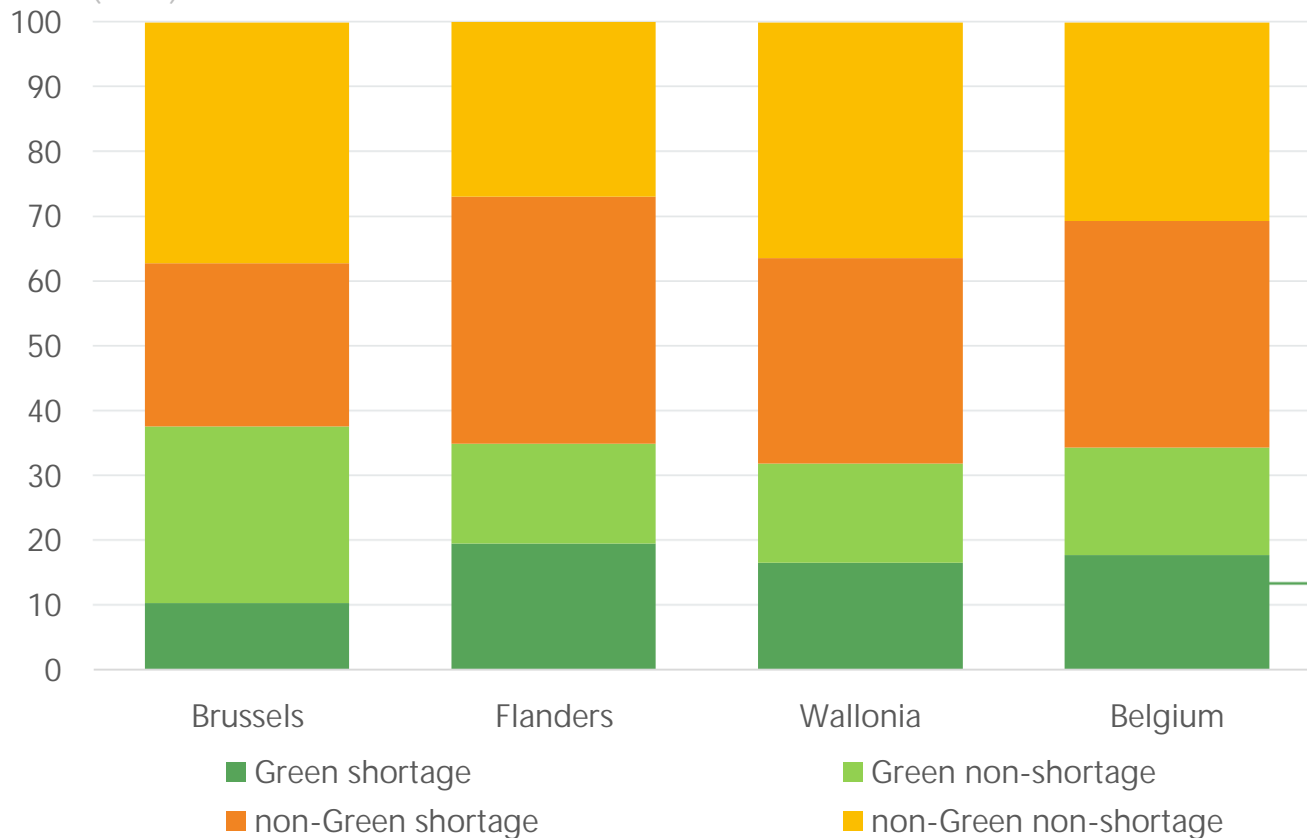
(1 = not important, 5 = extremely important)



# Empirical results

## Descriptive statistics

Distribution of employment in shortage, non-shortage; green, non-green categories, regions and BE (2023)



87 % are male workers



69 % are low or medium educated workers (50% in full sample)



Less in Brussels



More full-time positions and permanent contracts

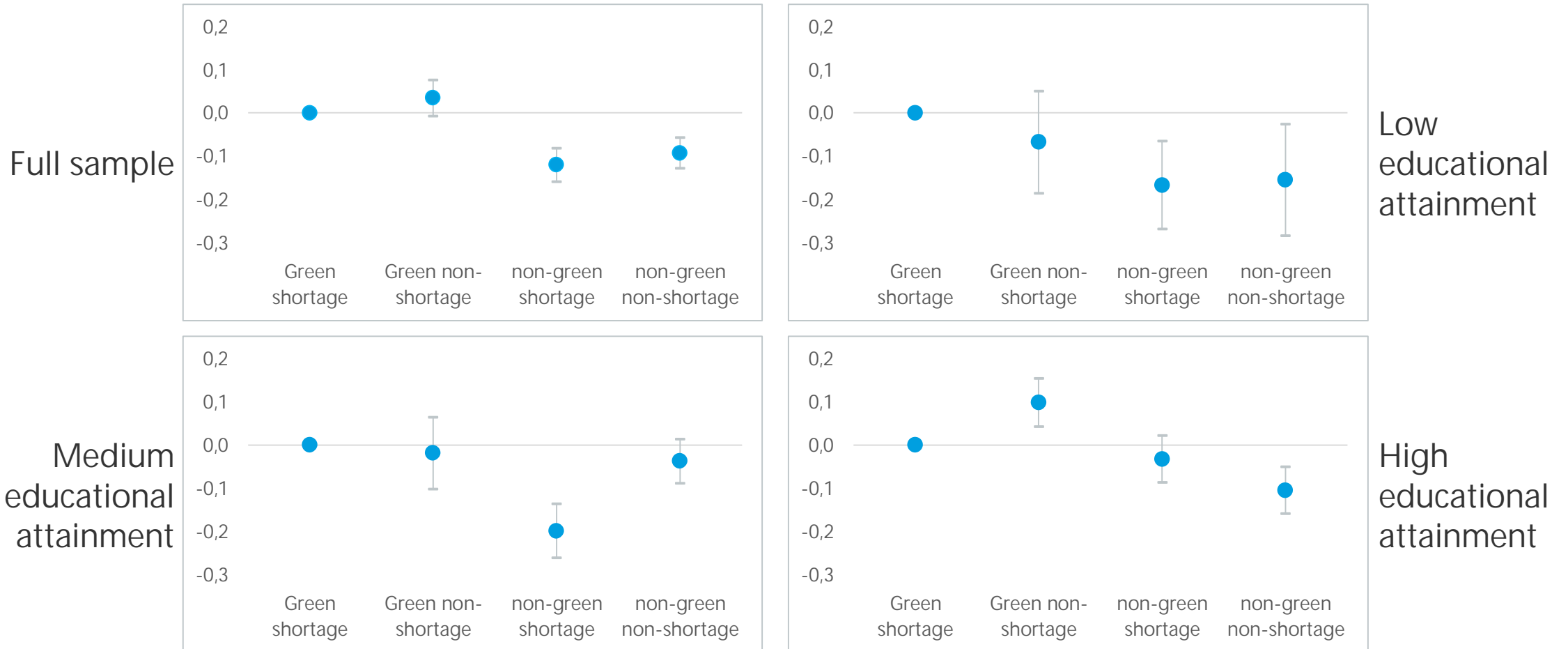


More in construction and manufacturing and less in nonmarket services

# Empirical results

## Descriptive statistics

Earnings premium for (non-)green (non-)shortage occupations





# Empirical results

## Transition to green shortage jobs

Yearly transitions between (non) green jobs (not) in shortage

(All workers, 140 580 observations)

		Type of job one year later				
		Green shortage	Green non-shortage	Non-green shortage	Non-green non-shortage	Total
Type of job in reference quarter	Green shortage	<b>93.7%</b>	<b>2.5%</b>	1.7%	2.1%	100%
	Green non-shortage	<b>2.6%</b>	<b>92.0%</b>	1.8%	3.5%	100%
	Non-green shortage	0.9%	1.2%	<b>95.1%</b>	<b>2.8%</b>	100%
	Non-green non-shortage	1.3%	2.1%	<b>2.9%</b>	<b>93.7%</b>	100%

# Empirical results

## Transition to green shortage jobs

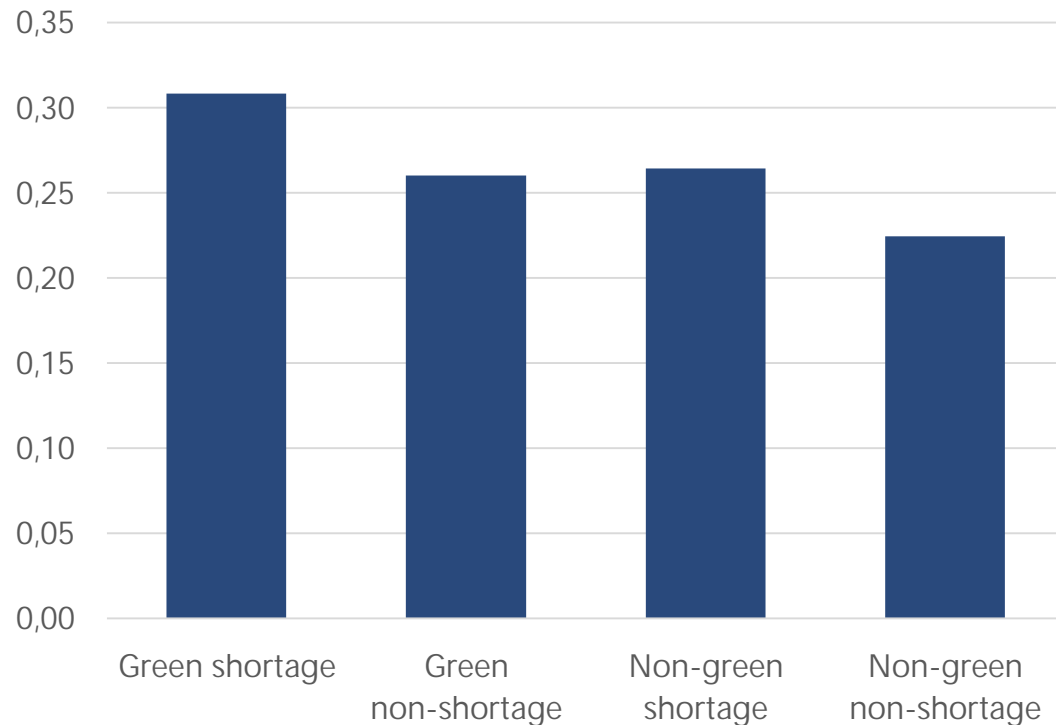
Probability to transition to a (non) green (non) shortage job

	To a green shortage job	To a green non-shortage job	To a non-green shortage job	To a non-green non-shortage job
Content skills	0.015 *** (0.004)	0.006 (0.005)	-0.031 *** (0.007)	0.009 (0.006)
Social skills	-0.002 (0.003)	-0.004 (0.004)	-0.006 (0.006)	0.010 * (0.005)
Technical skills	0.008 *** (0.002)	-0.002 (0.002)	-0.018 *** (0.004)	-0.009 ** (0.003)
Systems skills	-0.008 * (0.005)	0.004 (0.006)	0.009 (0.007)	0.017 ** (0.007)
Resource management skills	0.011 *** (0.003)	0.009 *** (0.003)	0.003 (0.004)	0.007 * (0.004)
Male	0.013 *** (0.001)	0.008 *** (0.002)	-0.009 *** (0.002)	-0.007 *** (0.002)
Primary & Utilities	0.012 *** (0.004)	0.019 *** (0.005)	-0.008 (0.006)	0.018 ** (0.008)
Manufacturing	0.021 *** (0.003)	0.021 *** (0.003)	-0.008 ** (0.003)	0.007 ** (0.004)
Construction	0.010 *** (0.003)	0.009 *** (0.003)	-0.006 (0.004)	-0.009 *** (0.003)
Business services	0.012 *** (0.002)	0.014 *** (0.002)	0.004 (0.003)	0.012 *** (0.002)
Demographic, sectoral and time controls	Yes	Yes	Yes	Yes
Baseline probability to transition to this job type	1.6 %	2.0 %	2.8 %	3.1 %
Year dummies	Yes	Yes	Yes	Yes
Obs.	119 809	121 001	94 204	99 926

# Empirical results

## Role of skill distance for the *potential* transitions

Average skills distance to 10 closest ... Jobs  
(skills distance based on importance score)

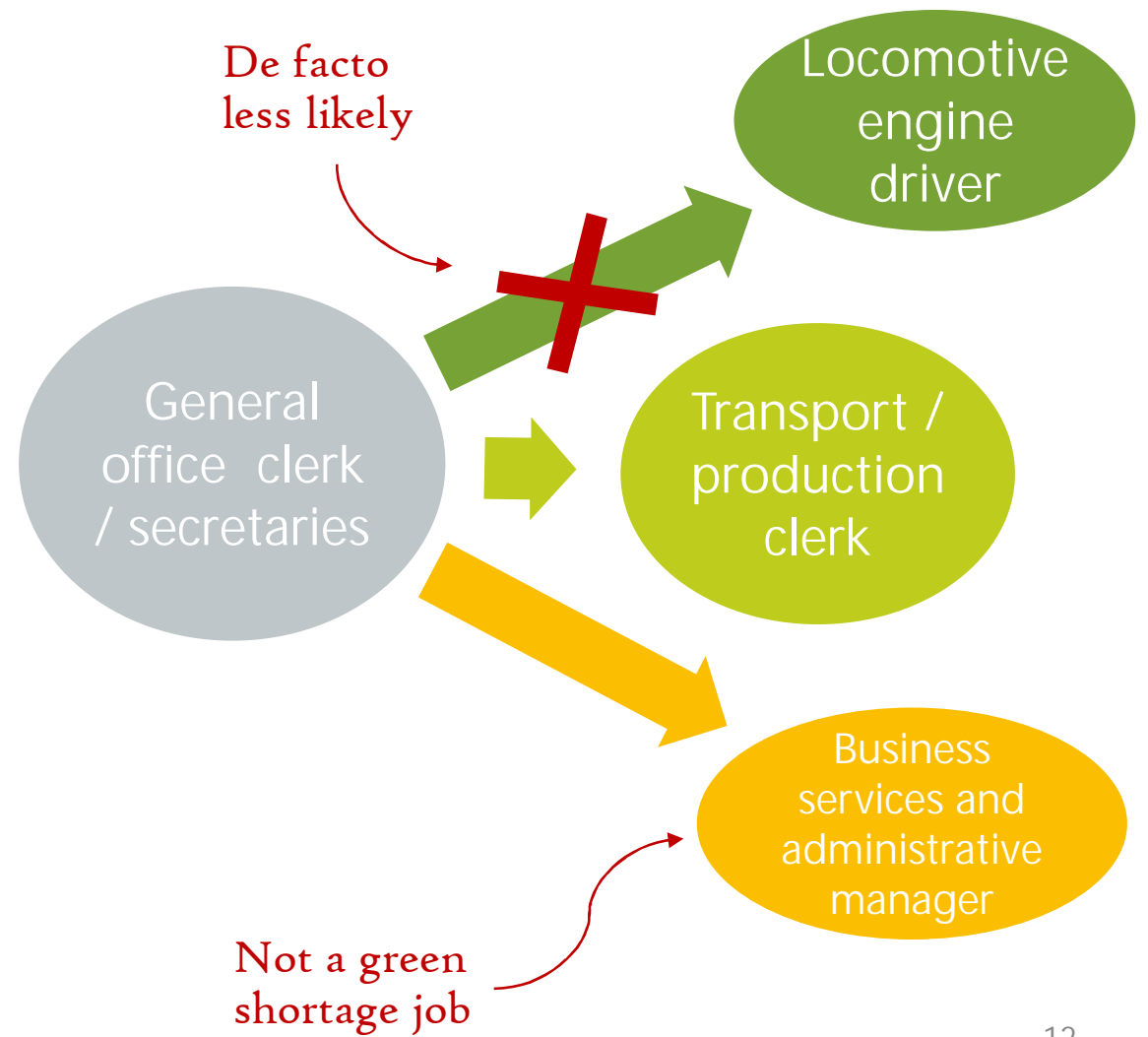
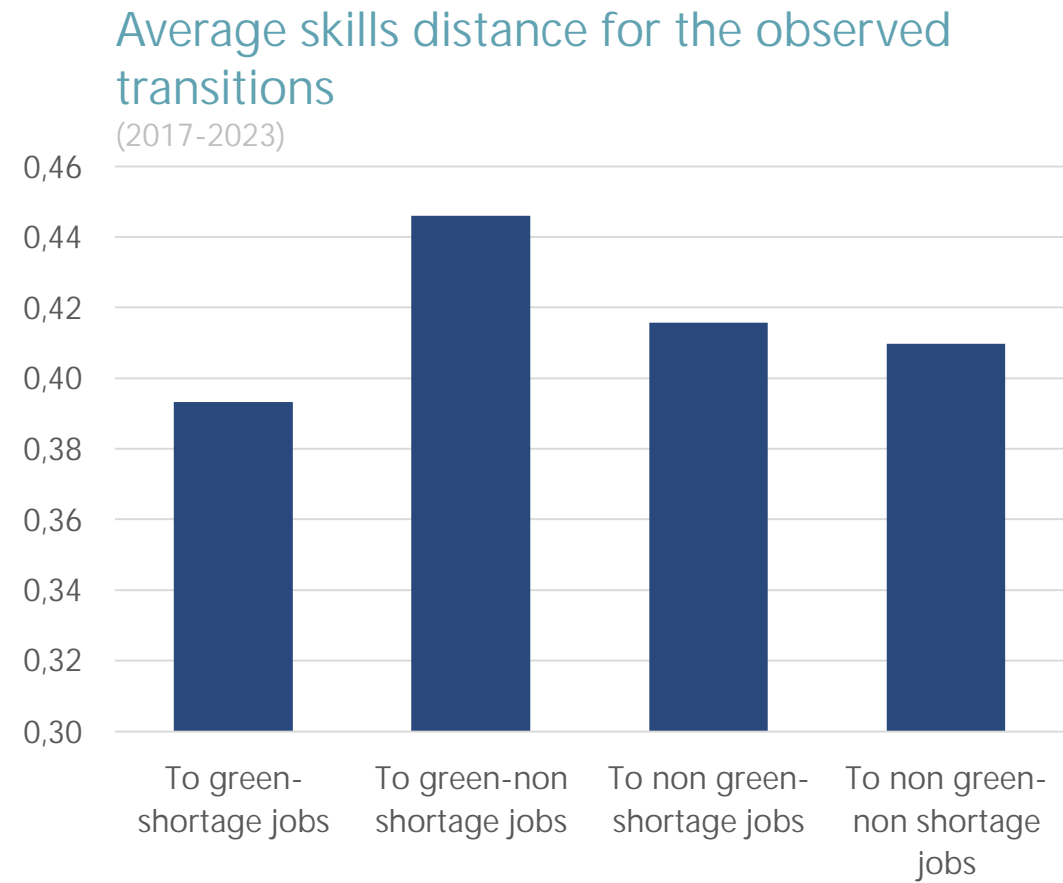


Probability to transition to a green job in shortage  
(marginal effect, regression with additional controls)

Transition to a green shortage job	
Average skills distance to 10 closest ...	
... green shortage jobs	-0.050 **
... green non-shortage jobs	-0.069 ***
... non-green shortage jobs	0.019
... non-green non-shortage jobs	0.087 ***
Baseline probability to transition	1.6 %
Demographic, professional and time controls	Yes
Obs.	119 809

# Empirical results

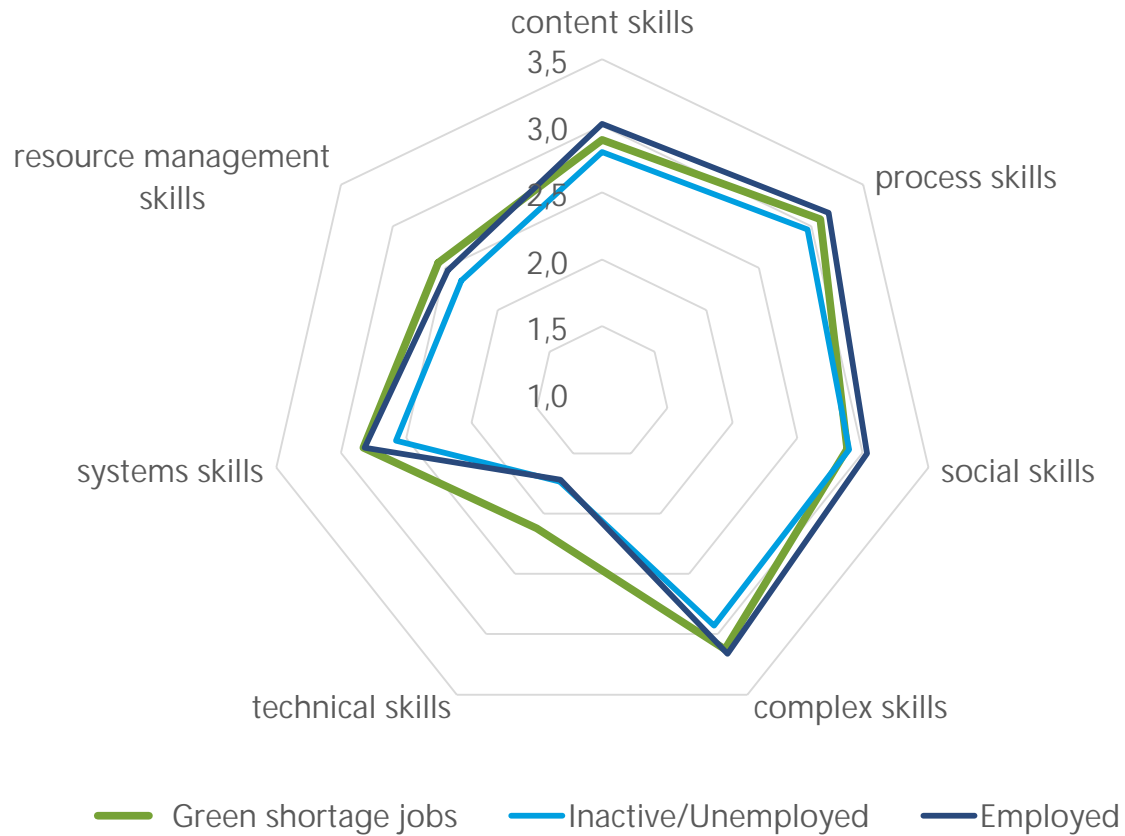
## Role of skill distance for the *observed* transitions



# Empirical results

## Transition from non-employment

Skill requirements of green shortage jobs versus skills of inactive/unemployed and employed population



# Conclusion

- Green shortage jobs ...
  - Pivotal for the transition to a decarbonised economy
  - Strong technical skills
  - Disruptive transitions
  - Higher skill mismatch among the people not in employment
- The issue is quantitative (too few transitions) but also qualitative (disruptive transitions fail to happen)
- Difficult to address: requires technical skills, upskilling inactive individuals, reshaping the training system ...
- Structural reforms to support green shortage jobs, enable disruptive transitions, and promote on-the-job training.
- Future research: exploring other factors or using harmonised European classification.



6 October, 2024



# Discussion

		Green shortage	Green non-shortage	Non-green shortage	Non-green non-shortage
Required years of experience (% of the respondents)	Over 2 years	48.2	60.9	28.3	38.1
Required on-site or in-plant training (% of the respondents)	Over 6 months	36.9	32.8	21.1	23.9
Working conditions (5 points scale <sup>1</sup> )	Exposed to hazardous conditions	2.5	1.8	1.6	1.5
	Exposed to contaminants	3.3	2.3	2.6	2.3
	Degree of automation	2.2	2.2	2.1	2.2