GEFÖRDERT VOM

INSTITUTE FOR EMPLOYMENT RESEARCH
The Research Institute of the Federal Employment Agency

TRACE

Bundesministerium für Bildung und Forschung

HOW DOES DECARBONIZATION AFFECT WORKERS?

The European Union’s Emissions Trading System and its effects on individual employment biographies

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Scottish Economic Society
Glasgow
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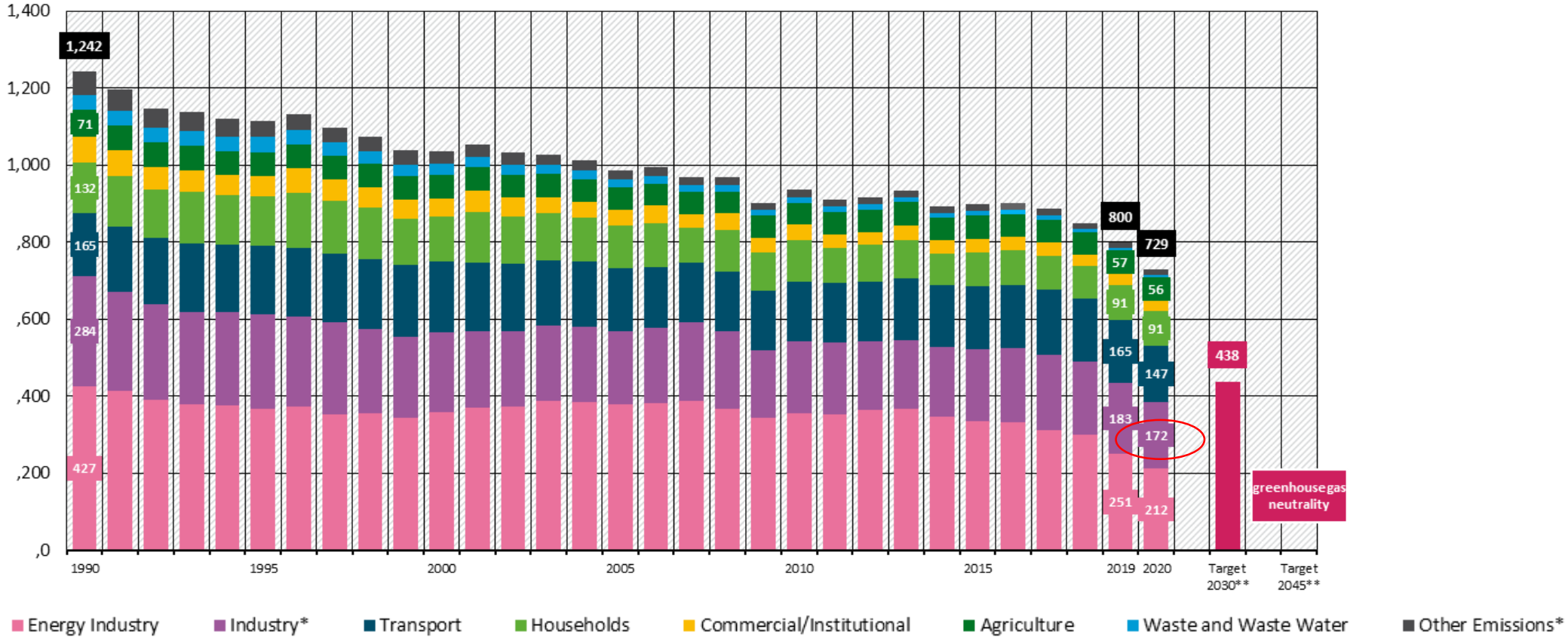
MOTIVATION & CONTRIBUTION

THE MANUFACTURING SECTOR CONTRIBUTES A SIGNIFICANT SHARE TO GERMANY'S TOTAL EMISSION OF GREENHOUSE GASES

Emission of greenhouse gases in Germany covered by the UN Framework Convention on Climate Change



Source: UBA (2022)

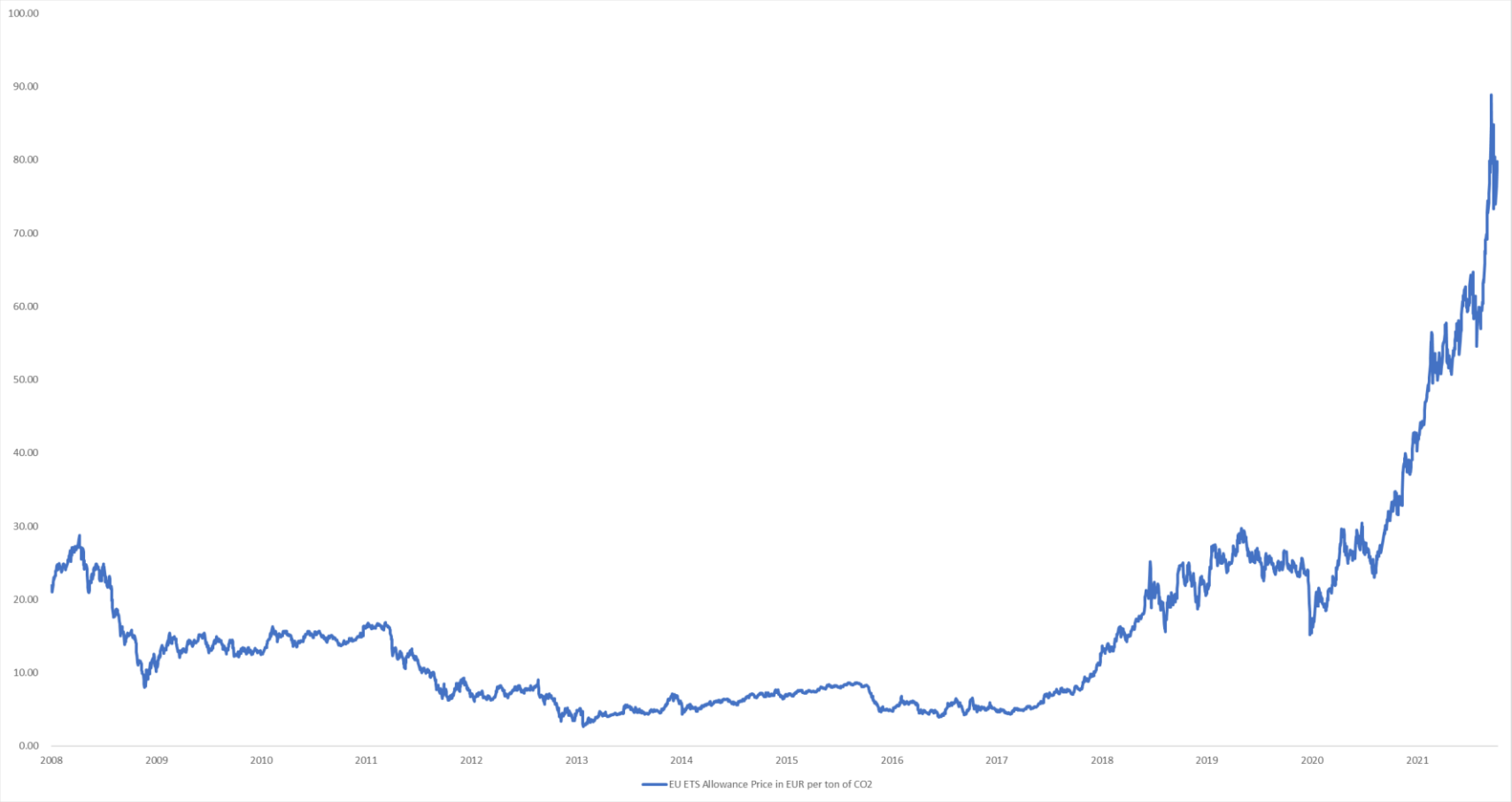
The European Union Emissions Trading System (EU ETS)

- Largest greenhouse gas emissions trading scheme in the world
  - Covers all EU member states as well as Iceland, Norway, Liechtenstein
  - More than 11,000 factories, power stations, other installations.
- Entry criterion: **a net heat excess of >= 20 MW.**
- Cornerstone of the EU’s climate policy - main goal: Reducing greenhouse gas emissions cost-effectively.
- In 2008, the installations regulated by the EU ETS were collectively responsible for about 50% of the EU's CO2 emissions and 40% of its total greenhouse gas emissions.
- Installations covered by the ETS reduced emissions by about 35% between 2005 and 2019 (EU 2022).

The European Union Emissions Trading System (EU ETS)

- Launched in 2005 and has undergone several changes. These change were implemented in trading periods, so called “phases”.

EU ETS ALLOWANCE PRICE IN EUR PER TON OF CO2



Low ETS Price until 2018 due to massive allocation of free CO_2 allowances

Source: https://icapcarbonaction.com/en/ets-prices and EUA spot price data provided by the EEX Group, own calculation

LABOUR MARKET IMPACT OF CLIMATE POLICIES

- Expectations about economic/labor market effects of climate policy are mixed.
  - According to static models of economics, environmental regulations lead to a loss of competitiveness or at best have no positive effects. e.g. *Jaffe/Palmer (1997)*
  - Environmental regulations can also be conducive to innovation and thus improve competitiveness – if the regulations are efficient e.g. *Porter/Van der Linde (1995), Ekins (2010), Acemoglu et al. (2012/2016).*

- Empirical evidence on the impact of climate policy on the labor market is also mixed
  - *Popp et al. (2020), Böhringer/Rosendahl (2020), Yang, X. et al. (2020), Yu/Li (2021) → positive employment impact*
  - *Anger, Oberndorfer (2008), Wagner et al. (2014) → no significant employment impact*
  - *Böhringer et al. (2012), Kenneth A. Castellanos & Garth Heutel (2019) → negative employment impact*

THIS PAPER

(1) Do climate policies in the manufacturing sector lead to disadvantages in labor market outcomes (cumulative earnings, employment stability, wage growth, …) at worker level?

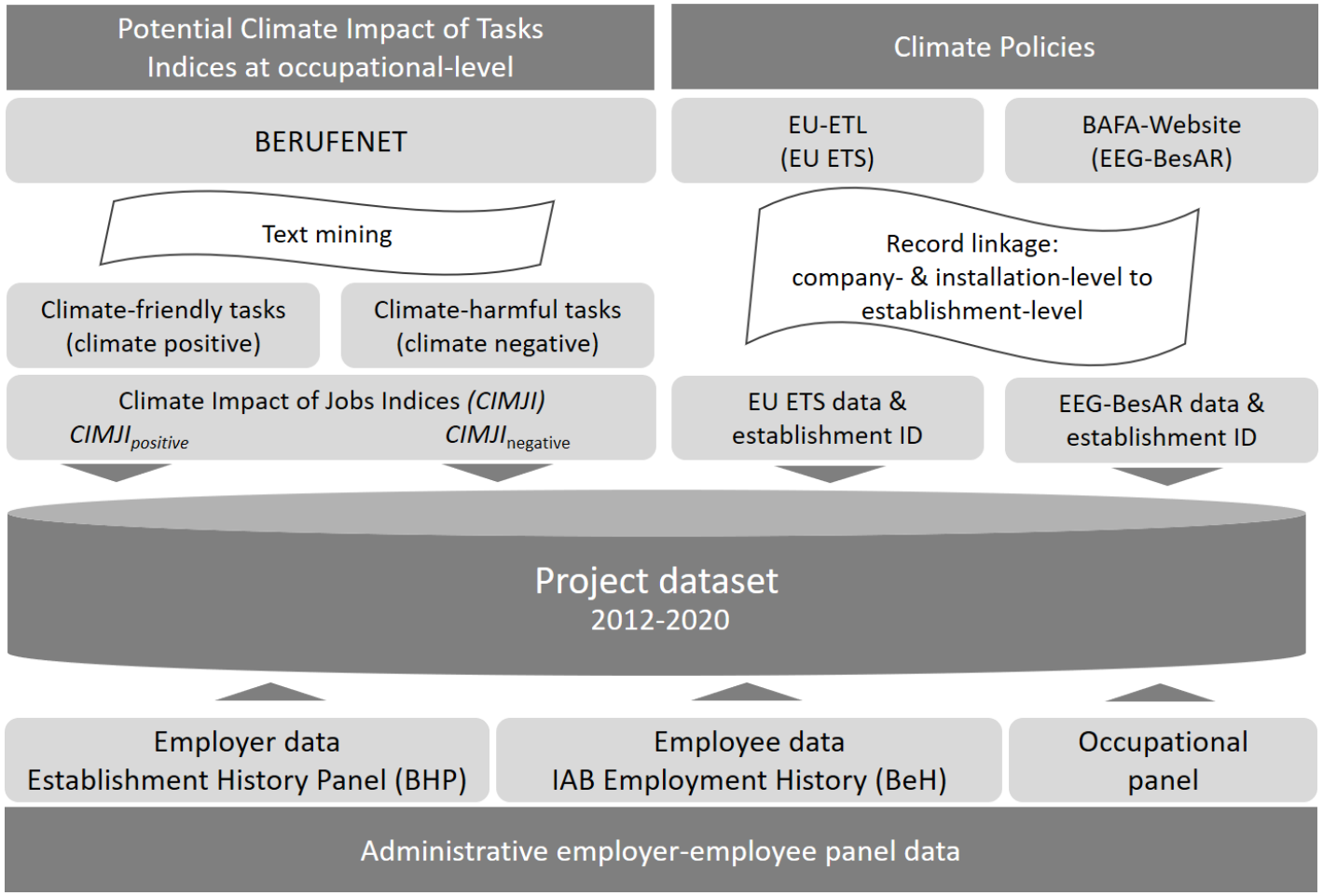
-> no: workers in ETS firms (i.e. establishments/ plants) exhibit higher employment stability, wage levels and cumulative earnings!

(2) Do the outcomes differ for workers in climate-harmful and climate-friendly occupations (according to the percentage of low-carbon tasks and high-carbon tasks)?

-> yes: workers in occupations with many high carbon tasks suffer in terms of cumulative earnings and wage growth!

DATA

DATA - OVERVIEW



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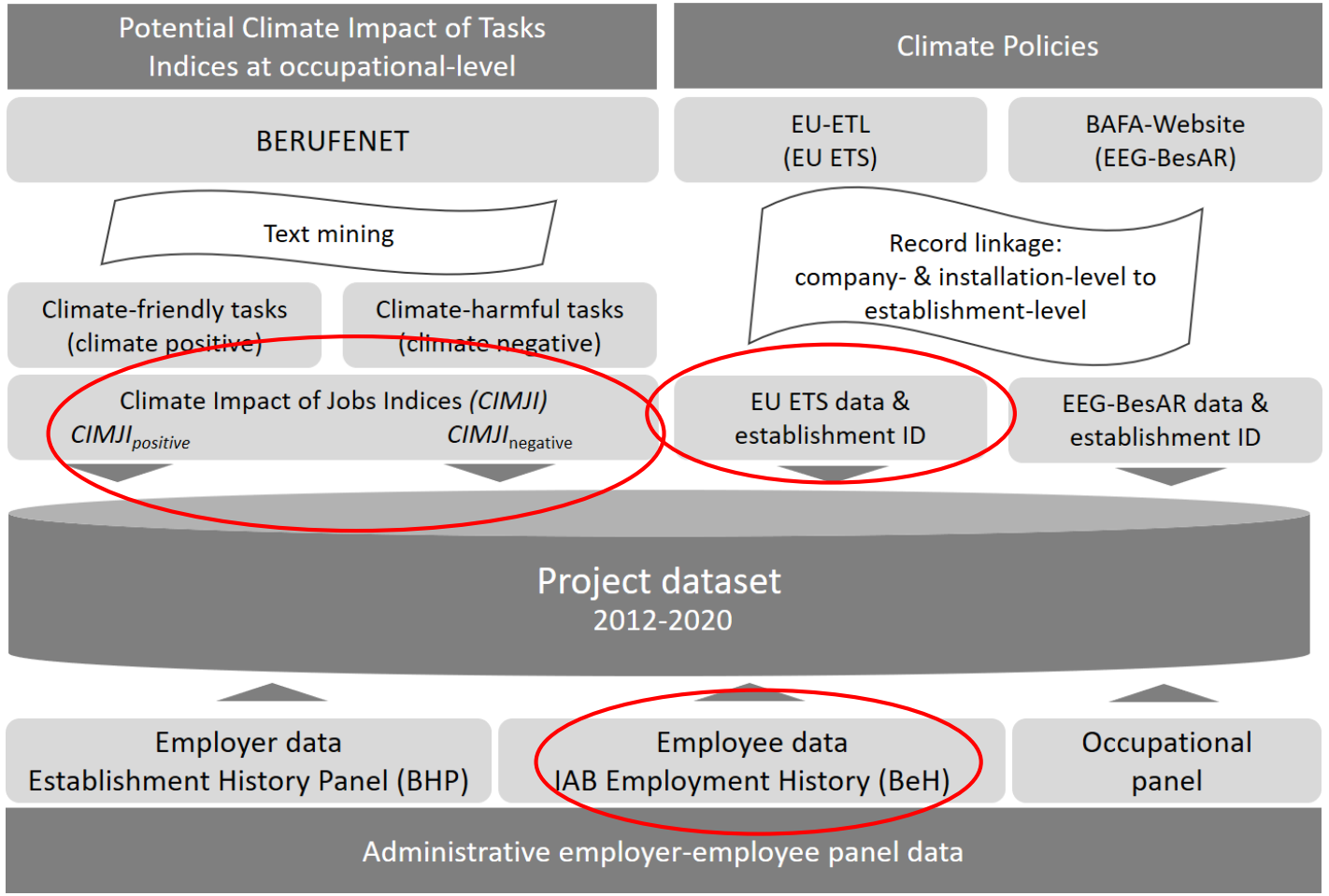

FIRM SELECTION

- Treatment Group
  - ETS-Firms 2005-2008 within the manufacturing sector (mnf):
    645 firms (Treat 1) [637 after worker selection]
  - ETS-Firms 2005-2008 (mnf) + CO2-costs in 2008 > 0:
    176 firms (Treat 2) [175 after worker selection]
- Control Group
  - 10 percent random sample of non-ETS firms in the manufacturing sector, established before the year 2009 with at least one employee in the year 2007:
    21,946 firms (Control)) [16,662 after worker selection]

INDIVIDUAL SELECTION

- Individuals employed in the manufacturing sector on June 30, 2007
- Aged 20-50 years (to avoid problems due to early retirement)
- Male and female workers
- Full-time workers
- Observations with valid wage (wages are imputed and deflated) and occupational information

  → 698,596 workers in 2007 with 6,401,712 observations between 2007 and 2016

selection

DESCRIPTIVES

WORKFORCE COMPOSITION (MEANS 2007)

	Control	ETS firms (Treat 1)	ETS firms (Treat 2)
Share of female workers (in %)	22.0	12.4	11.8
Share of workers by skill level (in %)			
low-skilled	10.1	6.9	8.3
skilled	76.5	77.1	79.3
high-skilled	13.5	16.0	12.3
Share of performed tasks (in %)			
analytical	20.0	22.5	19.2
interactive	4.3	2.6	2.0
routine-cognitive	33.5	37.3	38.1
routine manual	29.4	27.0	30.0
nonroutine manual	12.9	10.6	10.6
climate friendly	0.7	1.0	1.3
climate harmful	2.0	2.2	2.7
Mean age	37.8	38.5	38.5
Mean tenure	6.8	10.0	9.3
Mean establishment size	610,7	8748,0	1944,0
Number of observations	348,456	350,140	59,970

ETS (Treat 1) workers are less female, more highly-skilled, more routine, older, they have more tenure and work in larger firms…

Nuanced differences for subsample of ETS-workers in firms that experiencing a cost shock in 2008 (Treat 2)

WORKFORCE COMPOSITION, OUTCOMES

	Control	ETS firms (Treat 1)	ETS firms (Treat 2)
Probality in 2016, to ...			
… be employed	87.5	92.3	91.8
… change the employer	38.9	16.1	17.5
… change the industry	18.3	6.5	6.3
log wage	4.44	4.75	4.65
Diff log wage 2007-2016	0.30	0.36	0.33
Cumul. earnings 2007-2012 (in €)	194,125	273,747	243,277
Cumul. earnings 2007-2016 (in €)	354,141	503,470	444,022

Employment is more stable for ETS workers.

Wage growth is higher for ETS workers.

Cumulative earnings are higher for ETS workers.

ANALYSES

MODEL

(1) $$Y_{i\,t} = \beta_0 + \beta_1 DTreat_{\,it} + \beta_2 X_{i\,2007} + \varepsilon_{i\,2007}$$

$Y_{i\,t}$	outcomes: being employed in 2016, change of employer, industry or occupation (logit models); log wage in 2007, low wage diff. 2007-16, wage sum 2007-2016…(ols models)
$DTreat_{\,it}$	Dummy for treatment (working in a ETS-firm 2007); alternatively: working in a ETS-firm with costs 2008
$X_{i\,2007}$	Initial period individual- and firm-level characteristics (gender, age, education, tenure, foreigner status, firm size and age, sector dummies, federal state dummies).
β_1	measures the response in outcomes.

ADJUSTMENTS IN LOG CUMULATIVE EARNINGS

Dependent variable: log cumulative earnings of workers 2007-2016…

	all	stayer	switcher	occ stayer	occ switcher
ETS-worker	0.0525***	0.0375**	0.0125	0.0826***	0.0433**
	(3.31)	(2.23)	(0.60)	(5.51)	(2.55)
N	627,809	435,765	192,044	177,956	449,853
r2	0.5277	0.5738	0.4614	0.5296	0.5277
F	1279.59	999.0988	918.9986	588.1502	1080.68
			within ETS firms		
working in a climate friendly occupation	-0.0073	-0.0013	-0.0340*	0.0613***	-0.0393***
	(-0.70)	(-0.12)	(-1.91)	(4.99)	(-3.28)
working in a climate harmful occupation	-0.0745***	-0.0718***	-0.1209***	-0.0822***	-0.0695***
	(-6.28)	(-5.90)	(-6.95)	(-4.24)	(-5.49)

Notes: All models are estimated with OLS. Robust standard errors are clustered at the firm level and displayed in parentheses. Significance levels: * 10%, ** 5%, *** 1%.

- Cumulative earnings higher for workers in ETS-firms
- Within ETS firms: lower cumulative earnings for workers in climate-harmful occupations

ADJUSTMENTS IN EMPLOYMENT STABILITY

Dependent variable: being employed (2016) ….

	overall	in diff. firm	diff. sector	diff. occupation
ETS-worker	0.0081**	-0.1098***	-0.0712**	-0.0582***
	(2.06)	(-4.09)	(-2.21)	(-4.03)
		within ETS firms		
working in a climate friendly occupation	-0.0028	0.0022	-0.0066	-0.0452*
	(-1.45)	(0.20)	(-1.11)	(-1.89)
working in a climate harmful occupation	0.0035**	-0.0284***	-0.0071**	-0.0533**
	(2.43)	(-2.72)	(-2.09)	(-2.17)

Notes: The table shows average marginal effects based on logit models. Robust standard errors are clustered at the firm level and displayed in parentheses. Significance levels: * 10%, ** 5%, *** 1%.

- Higher employment stability for workers in ETS-firms
- Within ETS-firms: higher employment stability for workers in climate-harmful occupations

ADJUSTMENTS IN WAGE GROWTH

Dependent variable: delta log daily wage of workers 2007-2016

	all	stayer	switcher	occ stayer	occ switcher
ETS-worker	0.0086	0.0028	-0.0398**	0.0197***	0.0027
	(1.23)	(0.52)	(-2.44)	(2.69)	(0.35)
			within ETS firms		
working in a climate friendly occupation	-0.0050	-0.0060	0.0032	0.0160***	-0.0164**
	(-0.98)	(-1.23)	(0.23)	(2.69)	(-2.43)
working in a climate harmful occupation	-0.0198***	-0.0179***	-0.0666***	-0.0185**	-0.0222***
	(-3.36)	(-3.06)	(-4.93)	(-2.42)	(-3.41)

Notes: All models are estimated with OLS. Robust standard errors are clustered at the firm level and displayed in parentheses. Significance levels: * 10%, ** 5%, *** 1%.

- No overall wage growth differentials between workers in ETS-firms and other firms
- Within ETS-firms: Significant wage growth disadvantages for workers in climate harmful occupations, regardless of whether they stay or go

SUMMARY

(1) Do climate policies in the manufacturing sector lead to disadvantages in labor market outcomes (cumulative earnings, employment stability, wage growth, …) at worker level?

-> **no**: workers in ETS firms (i.e. establishments/ plants) exhibit higher employment stability, wage levels and cumulative earnings!

(2) Do the outcomes differ for workers in climate-harmful and climate-friendly occupations (according to the percentage of low-carbon tasks and high-carbon tasks)?

-> **yes**: workers in occupations with many high carbon tasks suffer in terms of cumulative earnings and wage growth!

OUTLOOK

- Robustness check: selection of employees into the firms: Check: tenure > 2 years.
- Other outcomes: days in employment?, separating unemployment from out-of-work force....
- Focus more on role of firm characteristics: climate friendliness?, energy intensity?, routine intensity?,...
- Heterogeneous worker effects: Qualification, requirement level, gender, ...

THANK YOU VERY MUCH!

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BACKUP

Link

WAGES (2007)

	all cov	stayer	switcher	occ stayer	occ switcher
DT_2	0.0300**	0.0272*	0.0311*	0.0539***	0.0246
	(2.02)	(1.90)	(1.78)	(3.94)	(1.58)
DTa_2	0.0184	0.0133	0.0486**	0.0495**	0.0135
	(0.85)	(0.58)	(2.30)	(2.19)	(0.62)
Treat_CTPI	0.0038	0.0081	-0.0229**	0.0564***	-0.0185**
	(0.48)	(0.90)	(-2.42)	(5.45)	(-2.09)
Treata_CTPI	0.0358**	0.0402**	0.0051	0.0884***	0.0049
	(2.09)	(2.20)	(0.31)	(4.25)	(0.31)
Treat_CTNI	-0.0640***	-0.0632***	-0.0611***	-0.0759***	-0.0548***
	(-6.89)	(-6.35)	(-6.39)	(-5.13)	(-5.42)
Treata_CTNI	-0.0485***	-0.0464***	-0.0476***	-0.0647***	-0.0349***
	(-3.82)	(-3.58)	(-3.17)	(-3.27)	(-2.85)

- Higher wages in ETS-firms
- Especially for future switcher and occ stayer
- Wage level disadvantage for workers in climate-harmful occupations

ADJUSTMENTS IN LOG CUMULATIVE EARNINGS (2007-16)

	(1)	(2)	(3)	(4)	(5)
	all cov	stayer	switcher	occ stayer	occ switcher
DT_2	0.0525***	0.0375**	0.0125	0.0826***	0.0433**
	(3.31)	(2.23)	(0.60)	(5.51)	(2.55)
DTa_2	0.0430*	0.0148	0.0300	0.0776***	0.0344
	(1.79)	(0.57)	(0.88)	(3.12)	(1.41)
Treat_CTPI	-0.0073	-0.0013	-0.0340*	0.0613***	-0.0393***
	(-0.70)	(-0.12)	(-1.91)	(4.99)	(-3.28)
Treat_CTPI	0.0426**	0.0447**	0.0104	0.1015***	0.0007
	(2.26)	(2.32)	(0.37)	(4.30)	(0.04)
Treat_CTNI	-0.0745***	-0.0718***	-0.1209***	-0.0822***	-0.0695***
	(-6.28)	(-5.90)	(-6.95)	(-4.24)	(-5.49)
Treat_CTNI	-0.0800***	-0.0737***	-0.1210***	-0.0867***	-0.0737***
	(-5.19)	(-4.83)	(-5.33)	(-3.31)	(-5.28)

- Cumulative earnings higher for workers in ETS-firms
- Within ETS firms: lower cumulative earnings for workers in climate-harmful occupations

ADJUSTMENTS IN EMPLOYMENT STABILITY (BEING EMPLOYED 2016)

	emp	estab.	sector	occ	Rout-decrease	Rout-increase
DT_2	0.0081**	-0.1098***	-0.0712**	-0.0582***	-0.0623***	0.0614***
	(2.06)	(-4.09)	(-2.21)	(-4.03)	(-5.17)	(5.11)
DTa_2	0.0210***	-0.2209***	-0.1466***	-0.0988***	-0.0526***	0.0521***
	(3.69)	(-4.81)	(-3.79)	(-4.72)	(-2.90)	(2.87)
Treat_CTPI	-0.0028	0.0022	-0.0066	-0.0452*	0.0552	-0.0556
	(-1.45)	(0.20)	(-1.11)	(-1.89)	(1.49)	(-1.50)
Treata_CTPI	-0.0038	-0.0059	-0.0230***	-0.1305**	0.1234***	-0.1256***
	(-0.90)	(-0.27)	(-3.30)	(-2.42)	(3.34)	(-3.37)
Treat_CTNI	0.0035**	-0.0284***	-0.0071**	-0.0533**	-0.0610**	0.0622**
	(2.43)	(-2.72)	(-2.09)	(-2.17)	(-1.96)	(2.00)
Treata_CTNI	0.0023	-0.0270*	-0.0051	-0.0696**	0.0172	-0.0164
	(0.67)	(-1.72)	(-1.11)	(-2.41)	(0.42)	(-0.39)

- Higher employment stability for workers in ETS-firms
- Within ETS-firms: higher employment stability for workers in climate-harmful occupations

ADJUSTMENTS IN WAGE GROWTH 2007-2016

	all cov	stayer	switcher	occ stayer	occ switcher
DT_2	0.0086	0.0028	-0.0398**	0.0197***	0.0027
	(1.23)	(0.52)	(-2.44)	(2.69)	(0.35)
DTa_2	0.0125	-0.0004	-0.0560**	0.0241**	0.0039
	(1.18)	(-0.05)	(-2.05)	(2.34)	(0.33)
Treat_CTPI	-0.0050	-0.0060	0.0032	0.0160***	-0.0164**
	(-0.98)	(-1.23)	(0.23)	(2.69)	(-2.43)
Treata_CTPI	0.0155*	0.0049	0.0428*	0.0228**	-0.0014
	(1.89)	(0.75)	(1.71)	(2.24)	(-0.14)
Treat_CTNI	-0.0198***	-0.0179***	-0.0666***	-0.0185**	-0.0222***
	(-3.36)	(-3.06)	(-4.93)	(-2.42)	(-3.41)
Treat_CTNI	-0.0339***	-0.0300***	-0.0741***	-0.0308***	-0.0384***
	(-4.83)	(-5.18)	(-3.86)	(-2.90)	(-4.93)

- No overall wage growth differentials between workers in ETS-firms and other firms
- Within ETS-firms: Significant wage growth disadvantages for workers in climate harmful occupations, regardless of whether they stay or go.

DATA
CLIMATE IMPACT OF JOBS INDEX (CIMJI)

Climate Impact of Jobs Index (CIMJI) ...

... describes the percentage of typical climate-friendly and climate-harmful tasks within an occupation

... allows to observe the change over time (so far 2012-2020)

... is collected by text mining using the BERUFENET database of the German Federal Employment Agency

DATA

CLIMATE IMPACT OF JOBS INDEX (CIMJI) – METHOD: TEXT MINING

Deductive approach

Project-specific text corpus

Sources: Scientific studies and public media

Dictionary ‘Climate-friendly Tasks‘

Climate protection-related occupational activities that correspond to the guiding principle of an ecologically sustainable economy, related to …

- Energy efficiency, raw material/material efficient
- Renewable energies & Hydrogen
- Other low-carbon or climate-neutral practices

Dictionary ‘Climate-harmful Tasks‘

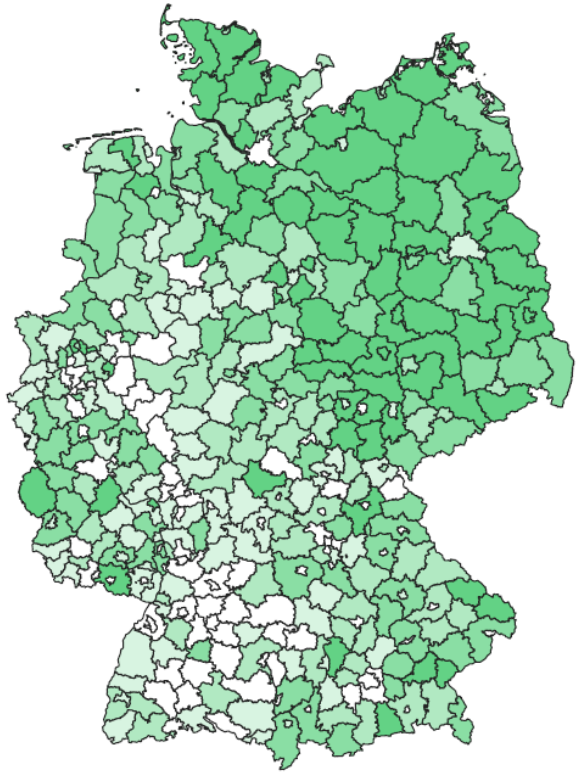
Occupational activities with a negative climate impact, such as …

- Combustion technologies and practices
- Energy-intensive processes
- Other activities that are know as being climate-harmful

DATA

CLIMATE IMPACT OF JOBS INDEX (CIMJI) – SPATIAL DISTRIBUTION

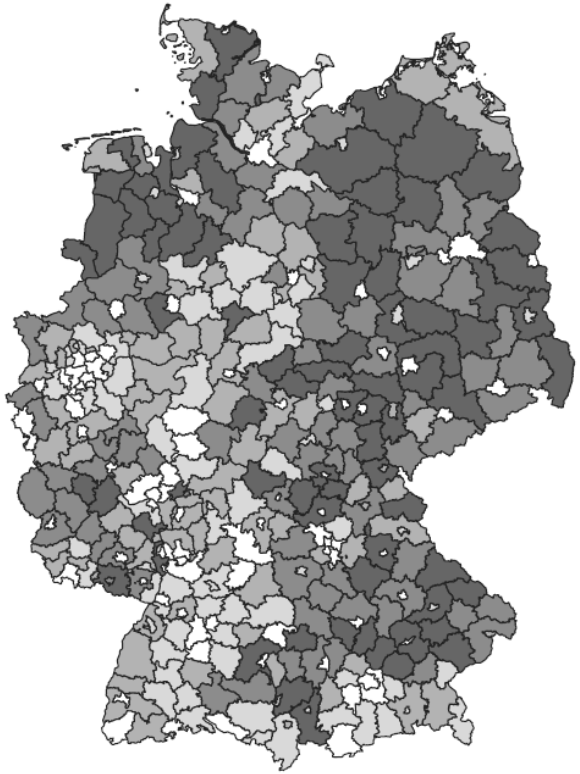
$CIMJI_{positive\ 2020}$
Climate-positive tasks



Percentage of occupations with climate-positive tasks
at county level in percent (2020), weighted according to the number of employees

- 0.60 - 1.00 %
- 1.00 - 1.20 %
- 1.20 - 1.30 %
- 1.30 - 1.50 %
- 1.50 - 2.20 %

$CIMJI_{negative\ 2020}$
Climate-negative tasks



Percentage of occupations with climate-negative tasks
at county level in percent (2020), weighted according to the number of employees

- 0.70 - 1.20 %
- 1.20 -1.40 %
- 1.40 - 1.60 %
- 1.60 - 1.90 %
- 1.90 - 3.40 %

DATA

CLIMATE IMPACT OF JOBS INDEX (CIMJI) – CALCULATION (EXAMPLE: $CIMJI_{POS.CORE}$)

Type	Requirements	Climate Impact of Jobs Index (CIMJI) Elements	
		$cpos_core_{2014}$	all_core_{2014}
Core requirements (N=5)	Fire safety	0	1
	Emission/Immiss. control	**1**	1
	Fireplace inspection	0	1
	Customer advisory service	0	1
	Measurement	0	1
	$\sum$	**1**	5

$$CIMJI_{pos.core} = \frac{\sum cpos_core_{occ,t}}{\sum all_core_{occ,t}} \qquad CIMJI_{pos.core} = \frac{1}{5} = 0.2$$

DATA – CIMJI & OCCUPATIONS

Examples of climate-friendly occupations:

- Chemical and pharmaceutical engineering
- Electric Machine Technology
- Plumbing, Heating, Air Conditioning

Examples of climate-harmful occupations:

- Metal construction
- Building material production
- Metal surface treatment

ADMINISTRATIVE EMPLOYMENT RECORDS

- Social security records of the Federal Agency (Integrated Employment Biographies (IEB))
- All workers employed in the selected firms on June 30, 2007
- Employees covered by social security without special characteristics (excluded are civil-servants, students, self-employed)

- Content:
  - Individual information (age, gender, education etc.)
  - Employment information:
    - On daily basis
    - Job information (occupation, daily wage, part-time, etc.)
    - Unemployment information (benefit receipt etc.)

GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung

TRACE

EVALUATING POLICY INSTRUMENTS FOR THE TRANSFORMATION TO A LOW CARBON ECONOMY

Joint project with

ZEW (lead) and University of Mannheim

funded by BMBF Research program “Economics of Climate Change”

EVALUATING POLICY INSTRUMENTS FOR THE TRANSFORMATION TO A LOW CARBON ECONOMY

TRACE

Research questions of the overall project

What is the impact of climate policy on competitiveness, energy consumption and emissions of the manufacturing sector?

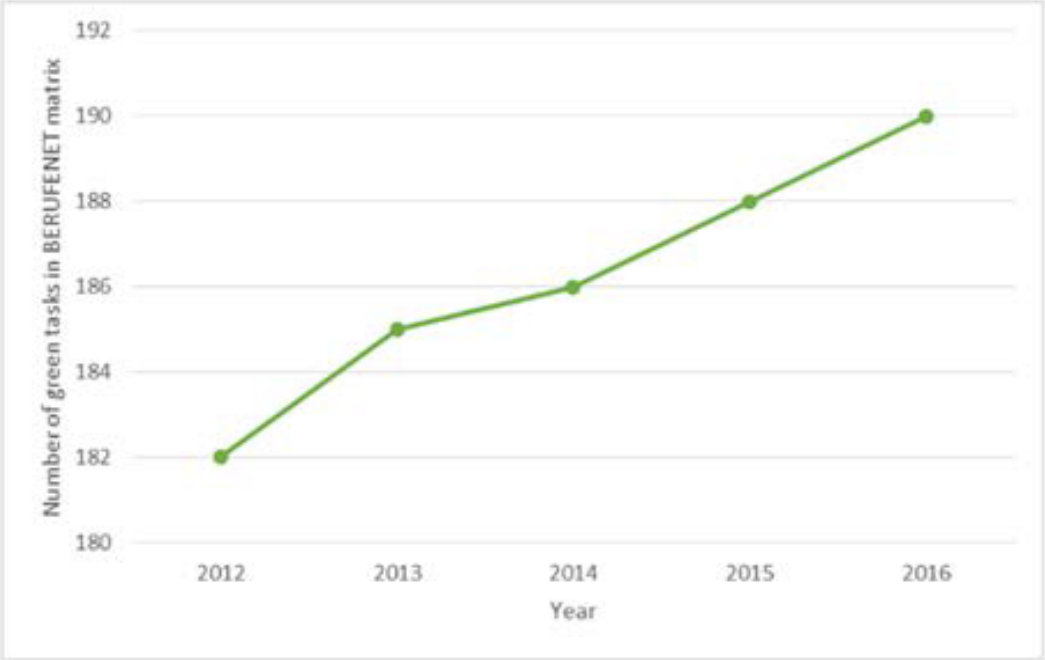
What is the impact of climate policy on the labor market? Employment, wages, occupational change (tasks).

Climate protection policies analyzed

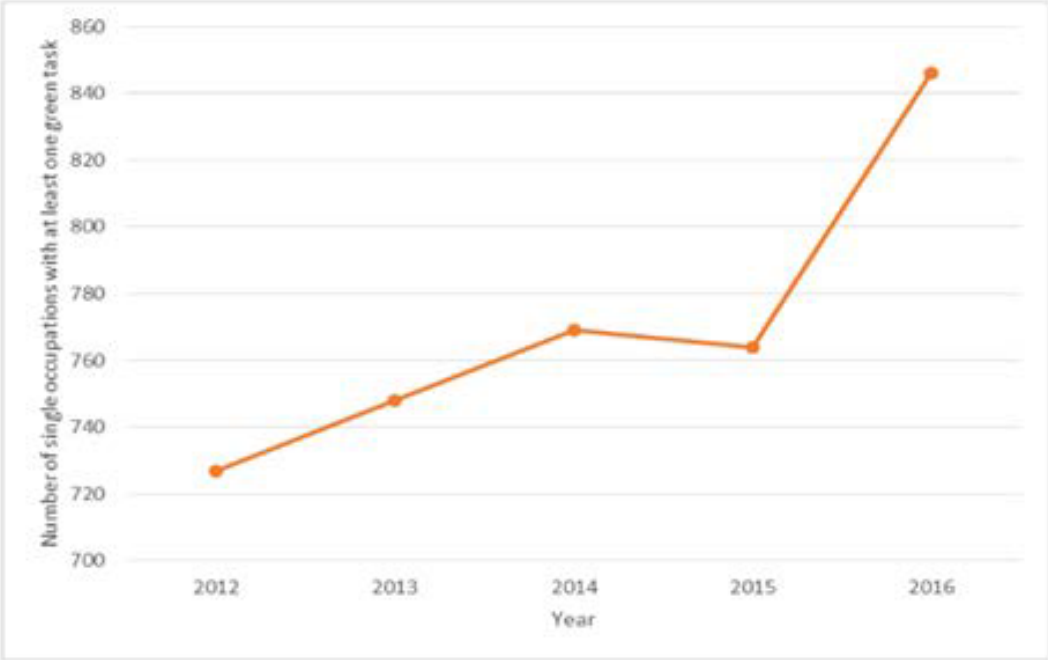
- European Emissions Trading Scheme (EU ETS)
- Renewable Energy Sources Act (EEG) / EEG levy
- Local electricity prices (network area charges)

RESULTS
DEVELOPMENT - GREENING OF JOBS

Number of "green" tasks (2012-2016)



Number of occupations with "green" tasks (2012-2016)



→ moderate Greening

RESULTS
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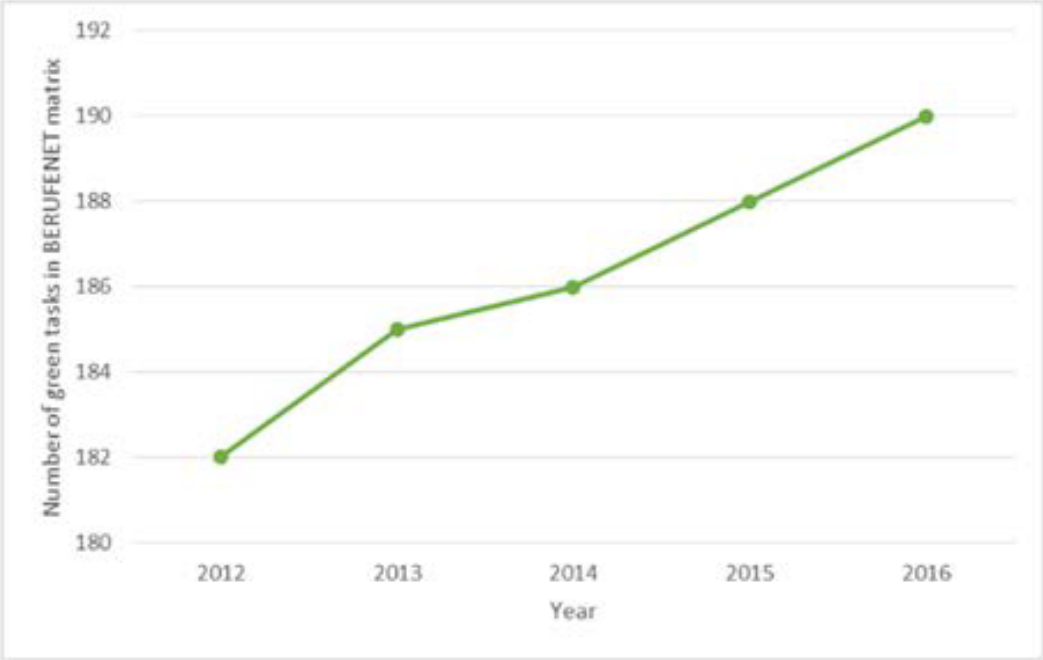

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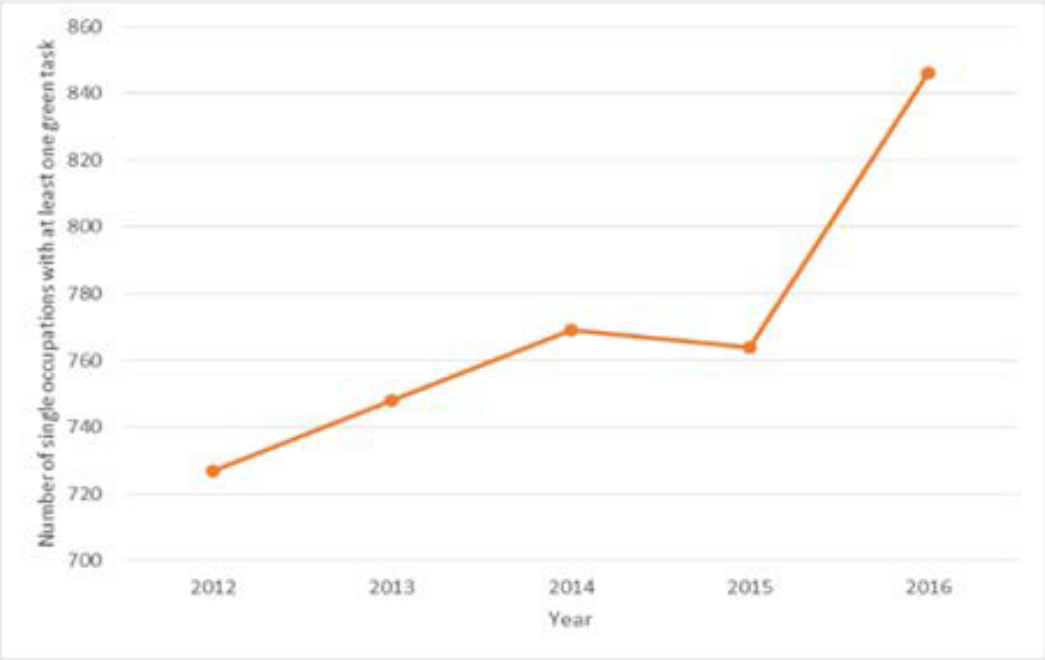
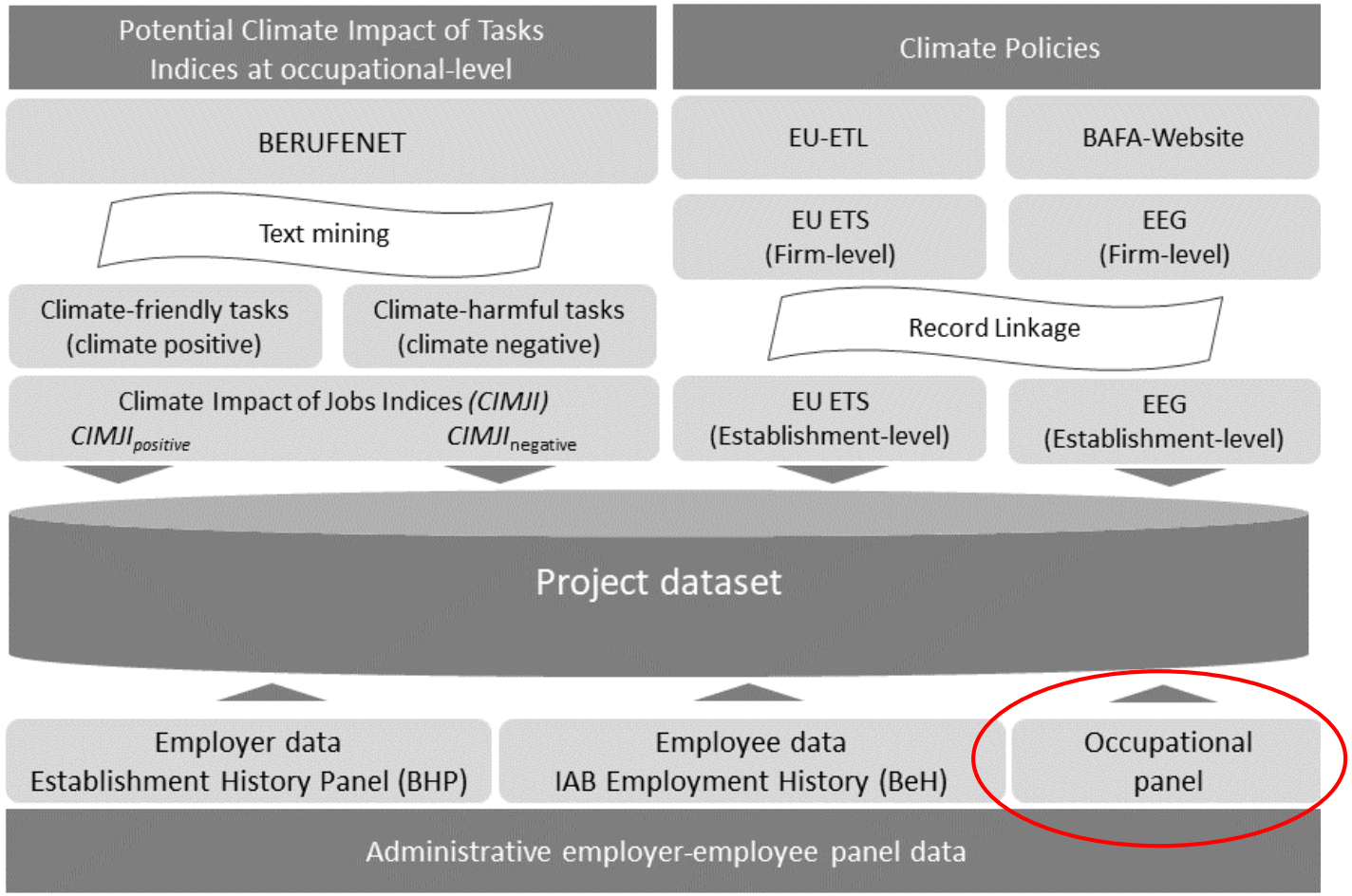


→ moderate Greening

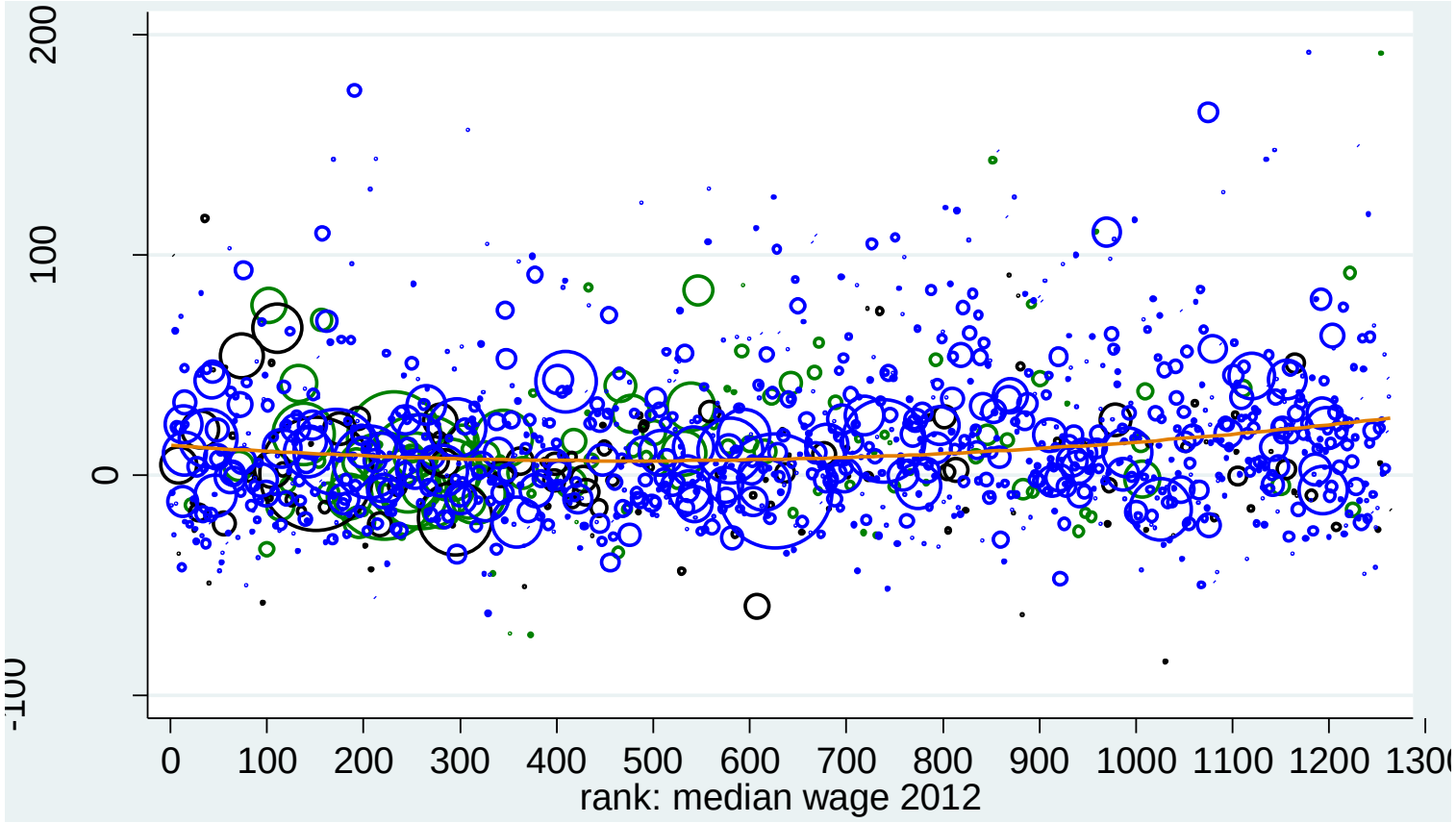
DECARBONIZATION AND LABOR MARKET OUTCOMES AT OCCUPATIONAL LEVEL

DATA - OVERVIEW



OCCUPATIONS WITH CLIMATE-FRIENDLY TASKS (GREEN) AND THOSE WITH CLIMATE-HARMFUL TASKS (BLACK): NO CLEAR PATTERN AT FIRST GLANCE

Changes in employment 2012-2020 (Ranking: Wages 2012)



Source BEH 2022, Own calculations

Table 1: Sample size and sample means 2012: Occupation groups by share of low-/high-carbon tasks

Variable (Label)	Occupations with Low-Carbon Tasks	Occupations with High-Carbon Tasks	Occupations with neither Low- nor High-Carbon Tasks (Reference Group)
	Sample size		
Number of occupations	111	124	1,024
	Sample means		
Number of employees			
Total full-time equivalents	8,944	13,773	19,248
Total headcount	9,297	14,674	22,219
Employee & employment characteristics			
Employee age group: 16 to <30 years	0.181	0.140	0.183
Employee age group: >=30 to <50 y.	0.541	0.531	0.531
Employee age group: >=50 y.	0.278	**0.329**	0.286
Women	0.101	0.121	**0.441**
Foreign nationality	0.063	**0.112**	0.075
Tenure (average years)	**7.173**	6.359	6.748
Full-time	**0.961**	0.935	0.846

Source: BEH 2022, own calculations

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Variable (Label)	Occupations with Low-Carbon Tasks	Occupations with High-Carbon Tasks	Occupations with neither Low- nor High-Carbon Tasks (Reference Group)
Education level			
Low education	0.067	**0.117**	0.078
Medium education	**0.865**	0.810	0.724
High education	0.068	0.073	**0.198**
Occupational characteristics			
Tasks characteristics			
Tasks-type: Non-routine analytical	0.142	0.129	**0.272**
Tasks-type: Non-routine interactive	0.043	0.024	**0.132**
Tasks-type: Routine cognitive	0.179	0.182	**0.311**
Tasks-type: Routine manual	**0.187**	**0.179**	0.119
Tasks-type: Non-routine manual	**0.449**	**0.485**	0.166

Source: BEH 2022, own calculations

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Variable (Label)	Occupations with Low-Carbon Tasks	Occupations with High-Carbon Tasks	Occupations with neither Low- nor High-Carbon Tasks (Reference Group)
Sectoral composition			
Primary sector	**0.034**	**0.037**	0.003
Secondary sector	**0.516**	0.457	0.314
Tertiary sector	0.450	0.506	**0.683**
Regional composition			
Regional types			
Core cities	0.297	0.272	**0.382**
Urbanized districts	**0.353**	**0.358**	**0.354**
Rural distr. with features of concentration	**0.180**	**0.190**	0.146
Rural districts-sparsely populated	**0.170**	**0.180**	0.119

Source: BEH 2022, own calculations

Table 1: Sample size and sample means 2012: Occupation groups by share of low-/high-carbon tasks

Variable (Label)	Occupations with Low-Carbon Tasks	Occupations with High-Carbon Tasks	Occupations with neither Low- nor High-Carbon Tasks (Reference Group)
Federal states groups			
North	0.162	0.166	0.156
West	**0.335**	**0.338**	**0.346**
East	**0.226**	**0.225**	0.184
South	0.277	0.271	**0.314**
Delta values 2012-2020	Δ2012-20	Δ2012-20	Δ2012-20
Total full-time equivalents	**7.2%**	6.4%	**11.0%**
Imputed log wages of full-time workers	**4.2**	4.0	3.5

Source: BEH 2022, own calculations

MODEL

(1) $$\Delta Y_{occ\ 2012-2020} = \beta_0 + \beta_1 LowCarb_{2012} + \beta_2 HighCarb_{2012} + \beta_3 X_{occ\ 2012} + \varepsilon_{occ\ 2012}$$

$Y_{occ\ t}$	specific response variable of the model
$EMP_{occ\ t}$	total of full-time equivalents
$WAGE_{occ\ t}$	mean of daily wages of full-time workers
occ	occupation at *5*-digit level of KldB2010.
t	time (yearly values, here: 2012.
LowCarb	dummy variable for low-carbon tasks,
HighCarb	dummy variable for high-carbon tasks.

Table : Low-and high-carbon tasks occupations and employment/wage growth: OLS estimation results at occupational level

Dependent variables:	Employment Full-time equivalents (pp, delta 2012-2020)		Wages Daily wages (delta log 2012-2020)	
	(1)	(2)	(3)	(4)
Low-Carbon Tasks Occupations 2012	-0.0377 (-1.13)	-0.0323 (-0.80)	0.0074*** (3.68)	0.0051** (2.25)
High -Carbon Tasks Occupations 2012	-0.0463 (-0.81)	-0.0204 (-0.48)	0.0054** (2.54)	0.0062*** 2.68
Constant	0.1100*** (6.18)	1.4374*** (3.43)	0.0345*** (31.85)	0.0669** (2.25)
Columns (1) and (3) show correlations. For columns (2) and (4), control variables of occupational characteristics are included (employment structure (age, foreigner, gender, education), regional, and sectoral characteristics).				
N	1,264	1,264	1,240	1,240
R^2	0.0038	0.2955	0.0244	0.5004
F	0.8440	8.1688	8.0377	19.9435

Source: BEH 2022, own calculations