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**Working Paper**

## The greening of jobs in Germany: First evidence from a text mining based index and employment register data

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# The greening of jobs in Germany

First evidence from a text mining based index and  
employment register data

–Online Appendix „Text Mining & Descriptives“–

Version: May 15, 2018

Markus Janser (IAB)

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# 1 Text Mining

## 1.1 Publications used for developing the green tasks dictionary (selection)

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Martinez-Fernandez, C.; Hinojosa, C.; Miranda, G. (2010): Greening jobs and skills: Labour market implications of addressing climate change. *OECD Local Economic and Employment Development working papers No. 2010/02*. Paris: OECD. URL: [http://www.oecd-ilibrary.org/industry-and-services/greening-jobs-and-skills\\_5kmbjgl8sd0r-en](http://www.oecd-ilibrary.org/industry-and-services/greening-jobs-and-skills_5kmbjgl8sd0r-en) (last access: May 8, 2018).

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## 1.2 Matches 'keywords to green tasks' 2006, 2011-2016 by green tasks category

Table OA-TM-1

Frequency table of matches from keywords to requirements 2006, 2011-2016

Green tasks category	Number of keywords	Keyword-requirements matches						
		2006	2011	2012	2013	2014	2015	2016
Energy production & storage	20	8	14	14	14	14	14	15
Mobility & tourism	34	35	48	50	52	52	53	53
Building	21	16	19	19	19	19	20	21
Farming, forestry, food, cons. goods	19	15	15	15	15	16	16	16
Energy efficiency & climate protection	9	10	10	10	11	11	11	11
Emission protct. (air, water, soil, noise)	27	25	26	26	26	26	26	26
Circular economy	13	24	24	24	24	24	24	24
Environmental protection (gen.)	10	23	25	25	25	25	25	25
Green tasks (total)	153	155	180	182	185	186	188	190
Share of total number of requirements		2.7%	2.7%	2.7%	2.8%	2.8%	2.8%	2.6%
Note: Total number of requirements		5,724	6,561	6,670	6,709	6,745	6,819	7,325

Source: BERUFENET, own calculations.





## 1.5 Word clouds 2012-2016 (time series)

Figure OA-TM-2

Word clouds of the frequency of green tasks dictionary keywords weighted by their appearance in the BERUFENET requirements 2006, 2012 to 2016 (time series)

2006



2012



2013



2014



2015



2016



Source: BERUFENET; own calculations.



## 1.6 Word clouds 2016 grouped by green tasks categories

Figure OA-TM-3

Word clouds of the frequency of green tasks dictionary keywords weighted by their appearance in the BERUFENET requirements 2016 (grouped by green tasks categories)

1. Energy



2. Mobility and Tourism



3. Building



4. Farming, forestry, food, consumer goods



5. Energy efficiency and further climate protection



6. Further emission protection (air, water, soil, noise)



7. Circular economy, (raw) material efficiency and waste management



8. Environmental protection (general)



Note: Each of these word clouds has been also created for the years 2006, and 2011 to 2015. They are available from the author on request.

Source: BERUFENET; own calculations.

## 2 Descriptives

### 2.1 Single occupations with *goji* > 0

Table OA-D-1

Number of single occupations with *goji* > 0 (year: 2012-2016, 8-digit level KldB2010)

Year	Number of occupations	Number of occupations with <i>goji</i> > 0		
		<i>goji<sub>total</sub></i> > 0	<i>goji<sub>core</sub></i> > 0	<i>goji<sub>add</sub></i> > 0
2012	3,702	688	294	585
2013	3,731	708	300	597
2014	3,738	728	303	623
2015	3,770	729	309	621
2016	3,946	785	357	656
$\Delta$ 2012-2016	325	97	63	71
in %	6.6%	14.1%	21.4%	12.1%

Source: BERUFENET, own calculations.

### 2.2 Average *goji* values of single occupations

Table OA-D-2

Average *goji* values of single occupations (8-digit level) –

a) all occupations and b) *goji* occupations only (with *goji<sub>total</sub>* > 0) (2012-2016)

Year	Number of occupations		Average <i>goji</i> values					
			<i>goji<sub>total</sub></i>		<i>goji<sub>core</sub></i>		<i>goji<sub>add</sub></i>	
			all	<i>goji</i>	all	<i>goji</i>	all	<i>goji</i>
2012	3,702	688	0.023	0.123	0.020	0.251	0.024	0.152
2013	3,731	708	0.023	0.121	0.020	0.252	0.024	0.149
2014	3,738	728	0.024	0.121	0.020	0.252	0.025	0.148
2015	3,770	729	0.023	0.121	0.021	0.262	0.024	0.147
2016	3,946	785	0.025	0.127	0.023	0.254	0.025	0.153
$\Delta$ 2012-2016	244	97	0.002	0.002	0.003	0.008	0.001	-0.001
in %	6.6%	14.1%	10.6%	10.6%	15.3%	7.7%	6.2%	-0.8%

Source: BERUFENET, own calculations.

## 2.3 The employment-weighted overall goji.de

Table OA-D-3

### The employment-weighted overall goji.de (KIdB 2010) 2012-2016

Year	<i>goji<sub>total</sub></i>	<i>goji<sub>core</sub></i>	<i>goji<sub>add</sub></i>	Employment total	,Full-green employment equivalents <sup>1</sup>
2012	0.0196	0.0143	0.0202	27,168,448	532,946
2013	0.0197	0.0144	0.0202	27,699,292	545,932
2014	0.0203	0.0144	0.0211	28,329,396	574,566
2015	0.0200	0.0149	0.0204	29,117,380	581,964
2016	0.0198	0.0150	0.0199	29,772,496	589,589
Δ2012-16	0.0002	0.0007	-0.0003	2,604,048	56,643
in %	1.0%	4.6%	-1.7%	9.6%	10.6%

Source: BERUFENET, Statistics data from the Federal Employment Agency, own calculations.

## 2.4 Goji values for selected occupational aggregates<sup>1</sup>

### 2.4.1 Occupational areas (KIdB2010, 1-digit level)

Table OA-D-4

#### Occupational areas and their greenness of jobs (1-digit level of KIdB2010, 2012-2016)

Occupational area: KIdB2010-ID and title	<i>goji<sub>total</sub></i>		<i>goji<sub>core</sub></i>		<i>goji<sub>add</sub></i>	
	2012	2016	2012	2016	2012	2016
1 Occupations in agriculture, forestry, farming, and gardening	0.080	0.066	0.091	0.070	0.091	0.056
2 Occupations in production of raw materials and goods, and manufacturing	0.009	0.012	0.003	0.005	0.013	0.015
3 Occupations in construction, architecture, surveying and technical building services	0.088	0.089	0.062	0.065	0.086	0.084
4 Occupations in natural sciences, geography and informatics	0.020	0.018	0.010	0.010	0.025	0.022
5 Occupations in traffic, logistics, safety & security	0.046	0.044	0.041	0.041	0.040	0.037
6 Occupations in commercial services, trading, sales, the hotel business and tourism	0.003	0.003	0.001	0.002	0.004	0.004
7 Occupations in business organization, accounting, law and administration	0.000	0.002	0.000	0.000	0.000	0.004
8 Occupations in health care, the social sector, teaching and education	0.001	0.001	0.000	0.000	0.001	0.001
9 Occupations in philology, literature, humanities, social sciences, economics, media, art, culture, and design	0.001	0.001	0.001	0.001	0.001	0.001

Source: BERUFENET, Statistics data from the Federal Employment Agency, own calculations.

<sup>1</sup> A selection of csv files with aggregated goji values is available on request from the author.

## 2.4.2 Occupational main groups (KldB2010, 2-digit level)

Table OA-D-5

### Occupational main groups and their greenness of jobs (2-digit level of KldB2010, 2012-2016)

Occupational main group: KldB2010-ID and title	<i>goji<sub>total</sub></i>		<i>goji<sub>core</sub></i>		<i>goji<sub>add</sub></i>	
	2012	2016	2012	2016	2012	2016
11 Occupations in agriculture, forestry, and farming	0.074	0.060	0.108	0.062	0.056	0.044
12 Occupations in gardening and floristry	0.085	0.071	0.077	0.076	0.120	0.067
21 Occupations in production and processing of raw materials, glass- and ceramic-making and -processing	0.007	0.006	0.004	0.005	0.006	0.003
22 Occupations in plastic-making and -processing, and wood-working and -processing	0.032	0.038	0.020	0.033	0.038	0.035
23 Occupations in paper-making and -processing, printing, and in technical media design	0.006	0.006	0.000	0.001	0.009	0.008
24 Occupations in metal-making and -working, and in metal construction	0.001	0.001	0.001	0.001	0.001	0.001
25 Technical occupations in machine-building and automotive industry	0.017	0.018	0.001	0.006	0.024	0.024
26 Occupations in mechatronics, energy electronics and electrical engineering	0.013	0.019	0.005	0.006	0.018	0.026
27 Occupations in technical research and development, construction, and production planning and scheduling	0.002	0.004	0.000	0.002	0.004	0.005
28 Occupations in textile- and leather-making and -processing	0.000	0.000	0.000	0.000	0.000	0.001
29 Occupations in food-production and -processing	0.000	0.006	0.000	0.000	0.001	0.011
31 Occupations in construction scheduling, architecture and surveying	0.027	0.028	0.005	0.006	0.040	0.041
32 Occupations in building construction above and below ground	0.060	0.062	0.042	0.049	0.051	0.049
33 Occupations in interior construction	0.102	0.104	0.073	0.085	0.101	0.099
34 Occupations in building services engineering and technical building services	0.125	0.127	0.092	0.090	0.122	0.121
41 Occupations in mathematics, biology, chemistry and physics	0.024	0.020	0.000	0.000	0.036	0.031
42 Occupations in geology, geography and environmental protection	0.321	0.324	0.274	0.276	0.338	0.341
43 Occupations in computer science, information and communication technology	0.000	0.000	0.000	0.000	0.000	0.000
51 Occupations in traffic and logistics (without vehicle driving)	0.015	0.014	0.012	0.014	0.016	0.011
52 Drivers and operators of vehicles and transport equipment	0.102	0.101	0.100	0.101	0.103	0.102
53 Occupations in safety and health protection, security and surveillance	0.020	0.022	0.018	0.015	0.023	0.028
54 Occupations in cleaning services	0.050	0.048	0.038	0.037	0.019	0.017
61 Occupations in purchasing, sales and trading	0.002	0.003	0.000	0.000	0.003	0.004
62 Sales occupations in retail trade	0.001	0.002	0.001	0.002	0.002	0.003
63 Occupations in tourism, hotels and restaurants	0.009	0.007	0.005	0.005	0.011	0.008
71 Occupations in business management and organization	0.000	0.000	0.000	0.000	0.000	0.000

Occupational main group: KldB2010-ID and title	<i>goji<sub>total</sub></i>		<i>goji<sub>core</sub></i>		<i>goji<sub>iadd</sub></i>	
	2012	2016	2012	2016	2012	2016
72 Occupations in financial services, accounting and tax consultancy	0.000	0.000	0.000	0.000	0.000	0.000
73 Occupations in law and public administration	0.001	0.015	0.000	0.000	0.002	0.028
81 Medical and health care occupations	0.000	0.000	0.000	0.000	0.000	0.000
82 Occupations in non-medical healthcare, body care, wellness and medical technicians	0.001	0.001	0.001	0.001	0.001	0.002
83 Occupations in education and social work, house-keeping, and theology	0.000	0.000	0.000	0.000	0.001	0.000
84 Occupations in teaching and training	0.003	0.003	0.000	0.000	0.005	0.007
91 Occupations in in philology, literature, humanities, social sciences, and economics	0.004	0.004	0.000	0.000	0.005	0.005
92 Occupations in advertising and marketing, in commercial and editorial media design	0.000	0.000	0.000	0.000	0.000	0.000
93 Occupations in product design, artisan craftwork, fine arts and the making of musical instruments	0.005	0.008	0.007	0.007	0.004	0.008
94 Occupations in the performing arts and entertainment	0.001	0.000	0.003	0.002	0.000	0.000

Sources: BERUFENET, Employment statistics data from the Federal Employment Agency, own calculations.

### 2.4.3 Occupational groups (KldB2010, 3-digit level)

**Table OA-D-6**  
**Occupational groups and their greenness of jobs**  
**(3-digit level of KldB2010, 2012-2016)**

Occupational main group: KldB2010-ID and title	<i>goji<sub>total</sub></i>		<i>goji<sub>core</sub></i>		<i>goji<sub>iadd</sub></i>	
	2012	2016	2012	2016	2012	2016
111 Occupations in farming	0.043	0.035	0.003	0.002	0.063	0.051
112 Occupations in animal husbandry	0.000	0.000	0.000	0.000	0.000	0.000
113 Occupations in horse keeping	0.000	0.000	0.000	0.000	0.000	0.000
114 Occupations in fishing	0.040	0.037	0.000	0.000	0.061	0.058
115 Occupations in animal care	0.000	0.000	0.000	0.000	0.000	0.000
116 Occupations in vini- and viticulture	0.046	0.046	0.000	0.000	0.081	0.082
117 Occupations in forestry, hunting and landscape preservation	0.267	0.248	0.581	0.400	0.105	0.070
121 Occupations in gardening	0.100	0.081	0.091	0.086	0.142	0.076
122 Occupations in floristry	0.000	0.000	0.000	0.000	0.000	0.000
211 Occupations in underground and surface mining and blasting engineering	0.008	0.011	0.003	0.007	0.010	0.012
212 Conditioning and processing of natural stone and minerals, production of building materials	0.005	0.001	0.000	0.000	0.008	0.001
213 Occupations in industrial glass-making and -processing	0.011	0.012	0.011	0.012	0.000	0.000
214 Occupations in industrial ceramic-making and -processing	0.000	0.000	0.000	0.000	0.000	0.000
221 Occupations in plastic- and rubber-making and -processing	0.000	0.000	0.000	0.000	0.000	0.000
222 Occupations in color coating and varnishing	0.000	0.000	0.000	0.000	0.000	0.000
223 Occupations in wood-working and -processing	0.077	0.093	0.048	0.080	0.090	0.085
231 Technical occupations in paper-making and -processing and packaging	0.023	0.023	0.000	0.004	0.037	0.031

232	Occupations in technical media design	0.000	0.000	0.000	0.000	0.000	0.000
233	Occupations in photography and photographic technology	0.000	0.000	0.000	0.000	0.000	0.000
234	Occupations in printing technology, print finishing, and book binding	0.000	0.000	0.000	0.000	0.000	0.000
241	Occupations in metal-making	0.000	0.000	0.000	0.000	0.000	0.000
242	Occupations in metalworking	0.000	0.000	0.000	0.001	0.000	0.000
243	Occupations in treatment of metal surfaces	0.012	0.019	0.000	0.000	0.016	0.023
244	Occupations in metal constructing and welding	0.001	0.001	0.003	0.003	0.000	0.000
245	Occupations in precision mechanics and tool making	0.000	0.000	0.000	0.000	0.000	0.000
251	Occupations in machine-building and -operating	0.021	0.011	0.000	0.000	0.031	0.018
252	Technical occupations in the automotive, aeronautic, aerospace and ship building industries	0.006	0.035	0.004	0.022	0.006	0.040
261	Occupations in mechatronics, automation and control technology	0.001	0.001	0.000	0.000	0.003	0.002
262	Technical occupations in energy technologies	0.028	0.033	0.010	0.013	0.038	0.042
263	Occupations in electrical engineering	0.000	0.010	0.000	0.000	0.001	0.015
271	Occupations in technical research and development	0.000	0.000	0.000	0.000	0.000	0.000
272	Draftspersons, technical designers, and model makers	0.004	0.011	0.001	0.009	0.007	0.012
273	Technical occupations in production planning and scheduling	0.003	0.003	0.000	0.000	0.005	0.005
281	Occupations in textile making	0.001	0.001	0.000	0.000	0.001	0.001
282	Occupations in the production of clothing and other textile products	0.000	0.000	0.000	0.000	0.000	0.000
283	Occupations in leather- and fur-making and -processing	0.000	0.001	0.000	0.000	0.001	0.002
291	Occupations in beverage production	0.017	0.012	0.000	0.000	0.033	0.024
292	Occupations in the production of foodstuffs, confectionery and tobacco products	0.000	0.000	0.000	0.000	0.000	0.000
293	Cooking occupations	0.000	0.009	0.000	0.000	0.000	0.017
311	Occupations in construction scheduling and supervision, and architecture	0.032	0.032	0.006	0.007	0.048	0.048
312	Occupations in surveying and cartography	0.000	0.000	0.000	0.000	0.000	0.000
321	Occupations in building construction	0.052	0.056	0.021	0.032	0.052	0.050
322	Occupations in civil engineering	0.083	0.084	0.106	0.105	0.047	0.047
331	Floor layers	0.138	0.149	0.018	0.028	0.189	0.211
332	Painters and varnishers, plasterers, occupations in the waterproofing of buildings, preservation of structures and wooden building components	0.059	0.054	0.017	0.029	0.077	0.067
333	Occupations in the interior construction and dry walling, insulation, carpentry, glazing, roller shutter and jalousie installation	0.135	0.145	0.151	0.170	0.098	0.097
341	Occupations in building services engineering	0.069	0.081	0.025	0.025	0.084	0.107
342	Occupations in plumping, sanitation, heating, ventilating, and air conditioning	0.131	0.126	0.077	0.081	0.178	0.147
343	Occupations in building services and waste disposal	0.220	0.216	0.233	0.226	0.116	0.114
411	Occupations in mathematics and statistics	0.004	0.005	0.000	0.000	0.006	0.006
412	Occupations in biology	0.019	0.020	0.001	0.001	0.029	0.030
413	Occupations in chemistry	0.029	0.023	0.000	0.000	0.043	0.035



414	Occupations in physics	0.003	0.003	0.000	0.000	0.004	0.004
421	Occupations in geology, geography and meteorology	0.094	0.091	0.023	0.023	0.122	0.118
422	Occupations in environmental protection engineering	0.364	0.366	0.233	0.242	0.417	0.413
423	Occupations in environmental protection management and environmental protection consulting	0.426	0.458	0.484	0.508	0.398	0.435
431	Occupations in computer science	0.000	0.000	0.001	0.001	0.000	0.000
432	Occupations in IT-system-analysis, IT-application-consulting and IT-sales	0.000	0.000	0.000	0.000	0.000	0.000
433	Occupations in IT-network engineering, IT-coordination, IT-administration and IT-organization	0.000	0.000	0.000	0.000	0.000	0.000
434	Occupations in software development and programming	0.000	0.000	0.000	0.000	0.000	0.000
511	Technical occupations in railway, aircraft and ship operation	0.011	0.018	0.024	0.037	0.007	0.007
512	Occupations in the inspection and maintenance of traffic infrastructure	0.003	0.104	0.003	0.115	0.003	0.029
513	Occupations in warehousing and logistics, in postal and other delivery services, and in cargo handling	0.006	0.003	0.002	0.002	0.009	0.003
514	Service occupations in passenger traffic	0.063	0.061	0.067	0.062	0.047	0.045
515	Occupations in traffic surveillance and control	0.210	0.214	0.222	0.228	0.191	0.194
516	Management assistants in transport and logistics	0.013	0.014	0.012	0.017	0.013	0.011
521	Driver of vehicles in road traffic	0.112	0.109	0.095	0.095	0.121	0.119
522	Drivers of vehicles in railway traffic	0.385	0.385	0.800	0.800	0.125	0.125
523	Aircraft pilots	0.000	0.000	0.000	0.000	0.000	0.000
524	Ship's officers and masters	0.000	0.000	0.000	0.000	0.000	0.000
525	Drivers and operators of construction and transportation vehicles and equipment	0.010	0.011	0.013	0.014	0.008	0.009
531	Occupations in physical security, personal protection, fire protection and workplace safety	0.018	0.020	0.017	0.014	0.020	0.025
532	Occupations in police and criminal investigation, jurisdiction and the penal institution	0.004	0.003	0.000	0.000	0.006	0.006
533	Occupations in occupational health and safety administration, public health authority, and disinfection	0.093	0.096	0.050	0.064	0.106	0.104
541	Occupations in cleaning services	0.050	0.048	0.038	0.037	0.019	0.017
611	Occupations in purchasing and sales	0.000	0.000	0.000	0.000	0.000	0.000
612	Trading occupations	0.000	0.000	0.000	0.000	0.001	0.001
613	Occupations in real estate and facility management	0.036	0.037	0.001	0.001	0.055	0.058
621	Sales occupations in retail trade (without product specialization)	0.000	0.000	0.000	0.000	0.000	0.000
622	Sales occupations (retail trade) selling clothing, electronic devices, furniture, motor vehicles and other durables	0.004	0.006	0.003	0.006	0.005	0.005
623	Sales occupations (retail) selling foodstuffs	0.001	0.005	0.001	0.002	0.000	0.009
624	Sales occupations (retail) selling drugstore products, pharmaceuticals, medical supplies and healthcare goods	0.009	0.008	0.000	0.000	0.017	0.015
625	Sales occupations (retail) selling books, art, antiques, musical instruments, recordings or sheet music	0.000	0.000	0.000	0.000	0.000	0.000

631	Occupations in tourism and the sports (and fitness) industry	0.069	0.066	0.041	0.052	0.085	0.068
632	Occupations in hotels	0.003	0.003	0.000	0.000	0.005	0.004
633	Gastronomy occupations	0.000	0.000	0.000	0.000	0.001	0.000
634	Occupations in event organization and management	0.006	0.006	0.000	0.000	0.012	0.011
711	Managing directors and executive board members	0.000	0.000	0.000	0.000	0.000	0.000
712	Legislators and senior officials of special interest organizations	0.004	0.006	0.000	0.000	0.007	0.008
713	Occupations in business organization and strategy	0.000	0.000	0.000	0.000	0.000	0.000
714	Office clerks and secretaries	0.000	0.000	0.000	0.000	0.000	0.000
715	Occupations in human resources management and personnel service	0.000	0.000	0.000	0.000	0.000	0.000
721	Occupations in insurance and financial services	0.000	0.000	0.000	0.000	0.000	0.000
722	Occupations in accounting, controlling and auditing	0.000	0.000	0.000	0.000	0.000	0.000
723	Occupations in tax consultancy	0.000	0.000	0.000	0.000	0.000	0.000
731	Occupations in legal services, jurisdiction, and other officers of the court	0.000	0.001	0.000	0.000	0.000	0.002
732	Occupations in public administration	0.001	0.019	0.000	0.000	0.002	0.036
733	Occupations in media, documentation and information services	0.000	0.000	0.000	0.000	0.000	0.000
811	Doctors' receptionists and assistants	0.000	0.000	0.000	0.000	0.000	0.000
812	Laboratory occupations in medicine	0.000	0.000	0.000	0.000	0.000	0.000
813	Occupations in nursing, emergency medical services and obstetrics	0.000	0.000	0.000	0.000	0.000	0.000
814	Occupations in human medicine and dentistry	0.001	0.001	0.002	0.002	0.000	0.000
815	Occupations in veterinary medicine and non-medical animal health practitioners	0.000	0.000	0.000	0.000	0.000	0.000
816	Occupations in psychology and non-medical psychotherapy	0.001	0.001	0.000	0.000	0.001	0.001
817	Occupations in non-medical therapy and alternative medicine	0.002	0.002	0.000	0.000	0.002	0.003
818	Occupations in pharmacy	0.000	0.000	0.000	0.000	0.000	0.000
821	Occupations in geriatric care	0.000	0.000	0.000	0.000	0.000	0.000
822	Occupations providing nutritional advice or health counselling, and occupations in wellness	0.012	0.014	0.000	0.000	0.018	0.020
823	Occupations in body care	0.002	0.004	0.003	0.003	0.001	0.007
824	Occupations in funeral services	0.000	0.000	0.000	0.000	0.000	0.000
825	Technical occupations in medicine, orthopedic and rehabilitation	0.000	0.000	0.000	0.000	0.000	0.000
831	Occupations in education and social work, and pedagogic specialists in social care work	0.000	0.000	0.000	0.000	0.000	0.000
832	Occupations in housekeeping and consumer counselling	0.003	0.002	0.000	0.000	0.005	0.003
833	Occupations in theology and church community work	0.000	0.000	0.000	0.000	0.000	0.000
841	Teachers in schools of general education	0.000	0.000	0.000	0.000	0.000	0.000
842	Teachers for occupation-specific subjects at vocational schools and in-company instructors in vocational training	0.007	0.006	0.002	0.002	0.010	0.008

843	Teachers and researcher at universities and colleges	0.000	0.000	0.000	0.000	0.000	0.000
844	Teachers at educational institutions other than schools (except driving, flying and sports instructors)	0.000	0.000	0.000	0.000	0.000	0.000
845	Driving, flying and sports instructors at educational institutions other than schools	0.018	0.021	0.000	0.000	0.045	0.065
911	Occupations in philology	0.000	0.000	0.000	0.000	0.000	0.000
912	Occupations in the humanities	0.000	0.000	0.000	0.000	0.000	0.000
913	Occupations in the social sciences	0.006	0.005	0.000	0.000	0.007	0.006
914	Occupations in economics	0.000	0.000	0.000	0.000	0.000	0.000
921	Occupations in advertising and marketing	0.000	0.000	0.000	0.000	0.000	0.000
922	Occupations in public relations	0.000	0.000	0.000	0.000	0.000	0.000
923	Occupations in publishing and media management	0.000	0.000	0.000	0.000	0.000	0.000
924	Occupations in editorial work and journalism	0.000	0.000	0.000	0.000	0.000	0.000
931	Occupations in product and industrial design	0.000	0.000	0.000	0.000	0.000	0.000
932	Occupations in interior design, visual marketing, and interior decoration	0.007	0.013	0.005	0.004	0.008	0.017
933	Occupations in artisan craftwork and fine arts	0.005	0.004	0.003	0.003	0.005	0.005
934	Artisans designing ceramics and glassware	0.000	0.000	0.000	0.000	0.000	0.000
935	Artisans working with metal	0.000	0.000	0.000	0.000	0.000	0.000
936	Occupations in musical instrument making	0.028	0.030	0.085	0.092	0.000	0.000
941	Musicians, singers and conductors	0.000	0.000	0.000	0.000	0.000	0.000
942	Actors, dancers, athletes and related occupations	0.000	0.000	0.000	0.000	0.000	0.000
943	Presenters and entertainers	0.000	0.000	0.000	0.000	0.000	0.000
944	Occupations in theatre, film and television productions	0.000	0.000	0.000	0.000	0.000	0.000
945	Occupations in event technology, cinematography, and sound engineering	0.000	0.000	0.000	0.000	0.000	0.000
946	Occupations in stage, costume and prop design,	0.000	0.000	0.000	0.000	0.000	0.000
947	Technical and management occupations in museums and exhibitions	0.007	0.006	0.031	0.025	0.000	0.000

Sources: BERUFENET, Employment statistics data from the Federal Employment Agency, own calculations.

## 2.4.4 Occ. main groups and requirements level (2-digit level plus 5<sup>th</sup> digit)

Table OA-D-7

Greenness index grouped by a combination of occupational main group and requirements level (in percent, weighted)

Occupational main group: KIdB2010-ID and title		Requirements level	<i>goji<sub>total</sub></i>		<i>goji<sub>core</sub></i>		<i>goji<sub>add</sub></i>	
			2012	2016	2012	2016	2012	2016
11 Occupations in agriculture, forestry, and farming	1 Unskilled/semi-skilled	0.028	0.020	0.028	0.020	0.000	0.000	
	2 Specialist	0.095	0.085	0.161	0.078	0.089	0.076	
	3 Complex specialist	0.141	0.141	0.177	0.162	0.117	0.123	
	4 Highly complex	0.112	0.116	0.152	0.156	0.091	0.092	
12 Occupations in gardening and floristry	1 Unskilled/semi-skilled	0.058	0.025	0.025	0.025	0.167	0.000	
	2 Specialist	0.093	0.093	0.098	0.105	0.102	0.099	
	3 Complex specialist	0.103	0.102	0.026	0.025	0.136	0.134	
	4 Highly complex	0.106	0.101	0.146	0.138	0.081	0.078	
21 Occupations in production and processing of raw materials, glass- and ceramic-making and -processing	1 Unskilled/semi-skilled	0.015	0.015	0.015	0.015	0.000	0.000	
	2 Specialist	0.002	0.001	0.000	0.000	0.004	0.001	
	3 Complex specialist	0.007	0.009	0.000	0.011	0.011	0.004	
	4 Highly complex	0.087	0.089	0.042	0.043	0.111	0.114	
22 Occupations in plastic-making and -processing, and wood-working and -processing	1 Unskilled/semi-skilled	0.012	0.013	0.012	0.013	0.000	0.000	
	2 Specialist	0.038	0.048	0.018	0.038	0.053	0.051	
	3 Complex specialist	0.054	0.055	0.088	0.087	0.035	0.035	
	4 Highly complex	0.085	0.086	0.127	0.130	0.057	0.057	
23 Occupations in paper-making and -processing, printing, and in technical media design	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000	

Occupational main group: KIdB2010-ID and title	Requirements level	<i>goji</i> <sub>total</sub>		<i>goji</i> <sub>core</sub>		<i>goji</i> <sub>add</sub>	
		2012	2016	2012	2016	2012	2016
	2 Specialist	0.009	0.011	0.000	0.002	0.015	0.015
	3 Complex specialist	0.002	0.002	0.000	0.000	0.004	0.003
	4 Highly complex	0.004	0.003	0.000	0.000	0.005	0.005
24 Occupations in metal-making and -working, and in metal construction	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0.001	0.001	0.001	0.002	0.001	0.001
	3 Complex specialist	0.001	0.001	0.000	0.000	0.002	0.002
	4 Highly complex	0.000	0.000	0.000	0.000	0.000	0.000
25 Technical occupations in machine-building and automotive industry	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0.019	0.019	0.001	0.007	0.026	0.025
	3 Complex specialist	0.026	0.034	0.003	0.005	0.039	0.049
	4 Highly complex	0.014	0.018	0.006	0.005	0.018	0.025
26 Occupations in mechatronics, energy electronics and electrical engineering	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0.014	0.017	0.006	0.007	0.020	0.022
	3 Complex specialist	0.017	0.023	0.004	0.005	0.023	0.031
	4 Highly complex	0.010	0.052	0.003	0.004	0.014	0.074
27 Occupations in technical research and development, construction, and production planning and scheduling	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A
	2 Specialist	0.003	0.008	0.000	0.004	0.006	0.011
	3 Complex specialist	0.004	0.004	0.000	0.003	0.007	0.006

Occupational main group: KIdB2010-ID and title	Requirements level	<i>goji</i> <sub>total</sub>		<i>goji</i> <sub>core</sub>		<i>goji</i> <sub>add</sub>	
		2012	2016	2012	2016	2012	2016
	4 Highly complex	0.000	0.000	0.000	0.000	0.000	0.000
28 Occupations in textile- and leather-making and -processing	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000
	3 Complex specialist	0.001	0.002	0.000	0.000	0.002	0.003
	4 Highly complex	0.014	0.015	0.000	0.000	0.020	0.021
29 Occupations in food-production and -processing	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0.001	0.011	0.000	0.000	0.001	0.020
	3 Complex specialist	0.001	0.001	0.000	0.000	0.002	0.002
	4 Highly complex	0.000	0.000	0.000	0.000	0.000	0.000
31 Occupations in construction scheduling, architecture and surveying	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A
	2 Specialist	0.024	0.026	0.015	0.015	0.029	0.032
	3 Complex specialist	0.018	0.020	0.003	0.006	0.027	0.028
	4 Highly complex	0.030	0.030	0.004	0.004	0.047	0.047
32 Occupations in building construction above and below ground	1 Unskilled/semi-skilled	0.057	0.057	0.057	0.057	0.000	0.000
	2 Specialist	0.064	0.069	0.036	0.046	0.072	0.076
	3 Complex specialist	0.054	0.054	0.049	0.048	0.054	0.055
	4 Highly complex	0.001	0.002	0.000	0.000	0.002	0.003
33 Occupations in interior construction	1 Unskilled/semi-skilled	0.106	0.105	0.106	0.105	0.000	0.000



Occupational main group: KIdB2010-ID and title	Requirements level	<i>goji</i> <sub>total</sub>		<i>goji</i> <sub>core</sub>		<i>goji</i> <sub>add</sub>	
		2012	2016	2012	2016	2012	2016
	2 Specialist	0.102	0.105	0.068	0.082	0.114	0.116
	3 Complex specialist	0.090	0.095	0.083	0.084	0.093	0.099
	4 Highly complex	N/A	N/A	N/A	N/A	N/A	N/A
34 Occupations in building services engineering and technical building services	1 Unskilled/semi-skilled	0.318	0.306	0.318	0.306	0.000	0.000
	2 Specialist	0.110	0.112	0.072	0.071	0.134	0.131
	3 Complex specialist	0.095	0.109	0.080	0.077	0.106	0.138
	4 Highly complex	0.108	0.119	0.074	0.080	0.127	0.139
41 Occupations in mathematics, biology, chemistry and physics	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0.031	0.024	0.000	0.000	0.045	0.035
	3 Complex specialist	0.029	0.032	0.000	0.000	0.055	0.059
	4 Highly complex	0.022	0.023	0.000	0.001	0.033	0.034
42 Occupations in geology, geography and environmental protection	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A
	2 Specialist	0.429	0.417	0.253	0.246	0.491	0.478
	3 Complex specialist	0.328	0.375	0.367	0.400	0.310	0.365
	4 Highly complex	0.254	0.241	0.224	0.218	0.267	0.250
43 Occupations in computer science, information and communication technology	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A
	2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000
	3 Complex specialist	0.000	0.000	0.000	0.000	0.000	0.000
	4 Highly complex	0.000	0.000	0.001	0.001	0.000	0.000

Occupational main group: KIdB2010-ID and title		Requirements	<i>goji</i> <sub>total</sub>		<i>goji</i> <sub>core</sub>		<i>goji</i> <sub>add</sub>	
		level	2012	2016	2012	2016	2012	2016
51 Occupations in traffic and logistics (without vehicle driving)	1 Unskilled/semi-skilled	0.003	0.003	0.003	0.003	0.000	0.000	
	2 Specialist	0.026	0.024	0.018	0.023	0.032	0.020	
	3 Complex specialist	0.058	0.076	0.062	0.081	0.049	0.067	
	4 Highly complex	0.009	0.008	0.009	0.008	0.008	0.008	
52 Drivers and operators of vehicles and transport equipment	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000	
	2 Specialist	0.111	0.110	0.109	0.109	0.112	0.111	
	3 Complex specialist	0.000	0.000	0.000	0.000	0.000	0.000	
	4 Highly complex	0.000	0.000	0.000	0.000	0.000	0.000	
53 Occupations in safety and health protection, security and surveillance	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000	
	2 Specialist	0.014	0.016	0.019	0.016	0.011	0.014	
	3 Complex specialist	0.055	0.063	0.011	0.009	0.099	0.118	
	4 Highly complex	0.074	0.067	0.053	0.047	0.085	0.078	
54 Occupations in cleaning services	1 Unskilled/semi-skilled	0.050	0.048	0.050	0.048	0.000	0.000	
	2 Specialist	0.052	0.052	0.000	0.000	0.081	0.080	
	3 Complex specialist	0.023	0.022	0.000	0.000	0.042	0.039	
	4 Highly complex	N/A	N/A	N/A	N/A	N/A	N/A	
61 Occupations in purchasing, sales and trading	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A	
	2 Specialist	0,000	0.003	0.004	0.000	0.000	0.005	
	3 Complex specialist	0,000	0.002	0.002	0.000	0.000	0.004	

Occupational main group: KIdB2010-ID and title	Requirements level	<i>goji</i> <sub>total</sub>		<i>goji</i> <sub>core</sub>		<i>goji</i> <sub>add</sub>	
		2012	2016	2012	2016	2012	2016
	4 Highly complex	0,001	0.000	0.000	0.000	0.000	0.000
62 Sales occupations in retail trade	1 Unskilled/semi-skilled	0,000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0,001	0.002	0.003	0.001	0.002	0.002
	3 Complex specialist	0,000	0.000	0.000	0.000	0.000	0.000
	4 Highly complex	0,000	0.000	0.000	0.000	0.000	0.000
63 Occupations in tourism, hotels and restaurants	1 Unskilled/semi-skilled	0,000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0,000	0.011	0.009	0.006	0.007	0.014
	3 Complex specialist	0,000	0.016	0.016	0.004	0.003	0.023
	4 Highly complex	0,000	0.012	0.010	0.004	0.005	0.016
71 Occupations in business management and organization	1 Unskilled/semi-skilled	0,000	0.000	0.000	0.000	0.000	0.000
	2 Specialist	0,000	0.000	0.000	0.000	0.000	0.000
	3 Complex specialist	0,000	0.000	0.000	0.000	0.000	0.000
	4 Highly complex	0,000	0.001	0.001	0.001	0.001	0.000
72 Occupations in financial services, accounting and tax consultancy	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A
	2 Specialist	0,000	0.000	0.000	0.000	0.000	0.000
	3 Complex specialist	0,000	0.000	0.000	0.000	0.000	0.000
	4 Highly complex	0,000	0.000	0.000	0.000	0.000	0.000
73 Occupations in law and public administration	1 Unskilled/semi-skilled	N/A	0.000	N/A	0.000	N/A	0.000
	2 Specialist	0,000	0.016	0.000	0.000	0.001	0.030

Occupational main group: KIdB2010-ID and title		Requirements level	<i>goji</i> <sub>total</sub>		<i>goji</i> <sub>core</sub>		<i>goji</i> <sub>add</sub>	
			2012	2016	2012	2016	2012	2016
		3 Complex specialist	0.000	0.018	0.000	0.000	0.000	0.035
		4 Highly complex	0.007	0.012	0.000	0.003	0.011	0.017
81	Medical and health care occupations	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
		2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000
		3 Complex specialist	0.000	0.000	0.000	0.000	0.000	0.000
		4 Highly complex	0.001	0.001	0.001	0.001	0.000	0.000
82	Occupations in non-medical healthcare, body care, wellness and medical technicians	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
		2 Specialist	0.001	0.001	0.001	0.001	0.000	0.002
		3 Complex specialist	0.003	0.007	0.000	0.000	0.005	0.012
		4 Highly complex	0.000	0.000	0.000	0.000	0.000	0.000
83	Occupations in education and social work, housekeeping, and theology	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000
		2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000
		3 Complex specialist	0.005	0.004	0.000	0.000	0.008	0.006
		4 Highly complex	0.000	0.000	0.000	0.000	0.000	0.000
84	Occupations in teaching and training	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A
		2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000
		3 Complex specialist	0.011	0.013	0.002	0.002	0.024	0.035
		4 Highly complex	0.001	0.001	0.000	0.000	0.001	0.001

Occupational main group: KIdB2010-ID and title		Requirements level	<i>goji</i> <sub>total</sub>		<i>goji</i> <sub>core</sub>		<i>goji</i> <sub>add</sub>	
			2012	2016	2012	2016	2012	2016
91 Occupations in in philology, literature, humanities, social sciences, and economics	1 Unskilled/semi-skilled	0.000	0.000	0.000	0.000	0.000	0.000	
	2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000	
	3 Complex specialist	0.000	0.000	0.000	0.000	0.000	0.000	
	4 Highly complex	0.004	0.005	0.000	0.000	0.005	0.005	
92 Occupations in advertising and marketing, in commercial and editorial media design	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A	
	2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000	
	3 Complex specialist	0.000	0.000	0.000	0.000	0.000	0.000	
	4 Highly complex	0.000	0.000	0.000	0.000	0.000	0.000	
93 Occupations in product design, artisan craftwork, fine arts and the making of musical instruments	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A	
	2 Specialist	0.003	0.007	0.008	0.008	0.001	0.006	
	3 Complex specialist	0.005	0.004	0.016	0.014	0.001	0.001	
	4 Highly complex	0.012	0.012	0.000	0.000	0.017	0.017	
94 Occupations in the performing arts and entertainment	1 Unskilled/semi-skilled	N/A	N/A	N/A	N/A	N/A	N/A	
	2 Specialist	0.000	0.000	0.000	0.000	0.000	0.000	
	3 Complex specialist	0.000	0.000	0.000	0.000	0.000	0.000	
	4 Highly complex	0.001	0.001	0.006	0.005	0.000	0.000	

Sources: BERUFENET, Employment statistics data from the Federal Employment Agency, own calculations.