

The White Paper on Twin Skills for the Twin Transition

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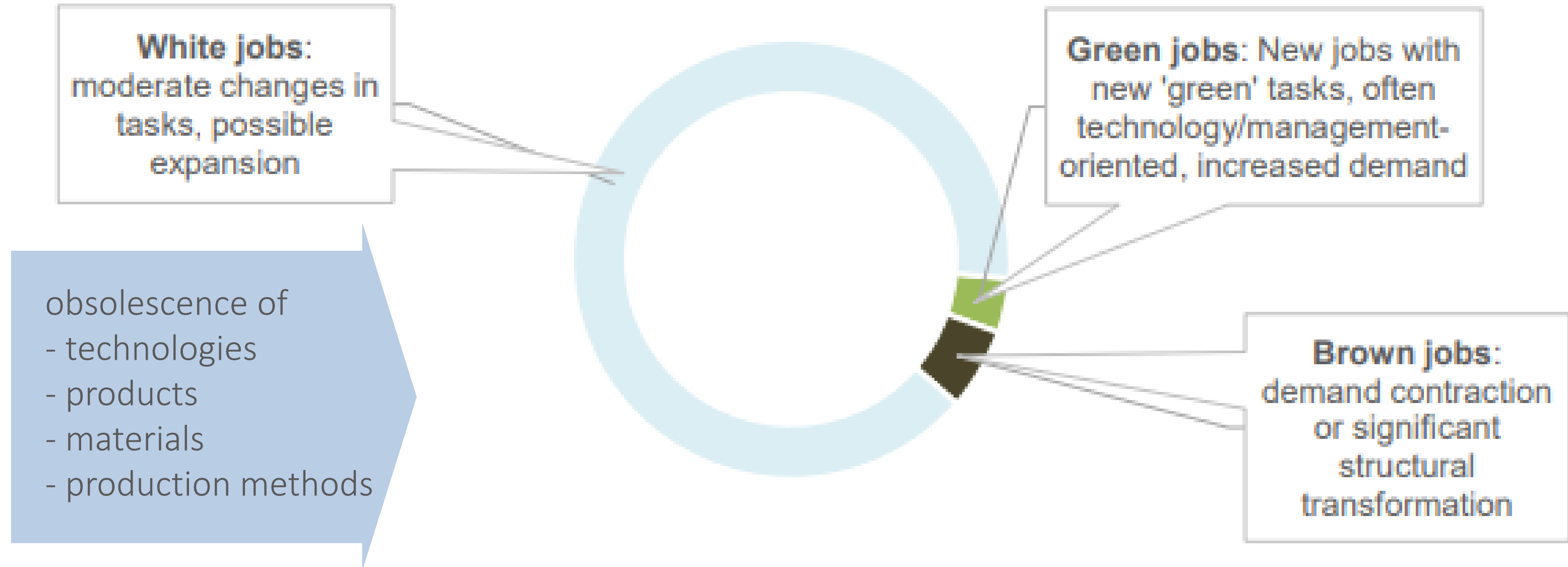
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85% of Jobs that will
exist in 2030 haven't
been invented yet!

Institute for the Future | Dell Technologies: Realising 2030 The Future of work

Expected changes in the labour market due to the green (and digital) transition



The Possible Implications of the Green Transition for the EU Labour Market Anneleen Vandeplass, Istvan Vanyolos, Mauro Vigani and Lukas Vogel DISCUSSION PAPER 176 | December 2022

The collaboration to draft the white paper

Background:

Need for informed decision making on how to better address skills gaps and mismatches in the green and digital era

Aim:

Development, launch, and dissemination of a **white paper on green digital skills** to enable **the twin transition (green & digital) in the European Union**, under the framework of the European Year of Skills 2023

Collaboration:

Huawei Public Affairs European office
Athena RC
PwC

Literature review pre-evaluation
Collection of publicly available, valid data sources
Quali-quant mix methodology
Utilisation of numeric and descriptive research elements to gain a conclusion

Design a multidimensional matrix skills methodology model that will serve as the core of the research

Develop a data-driven framework for Green & Digital Occupations in the EU

STI methodology to better understand labour skills and trends

- Applying data analytics and text mining techniques
- Comparing skills taxonomies & occupations with actual job positions to extract trends in the job market

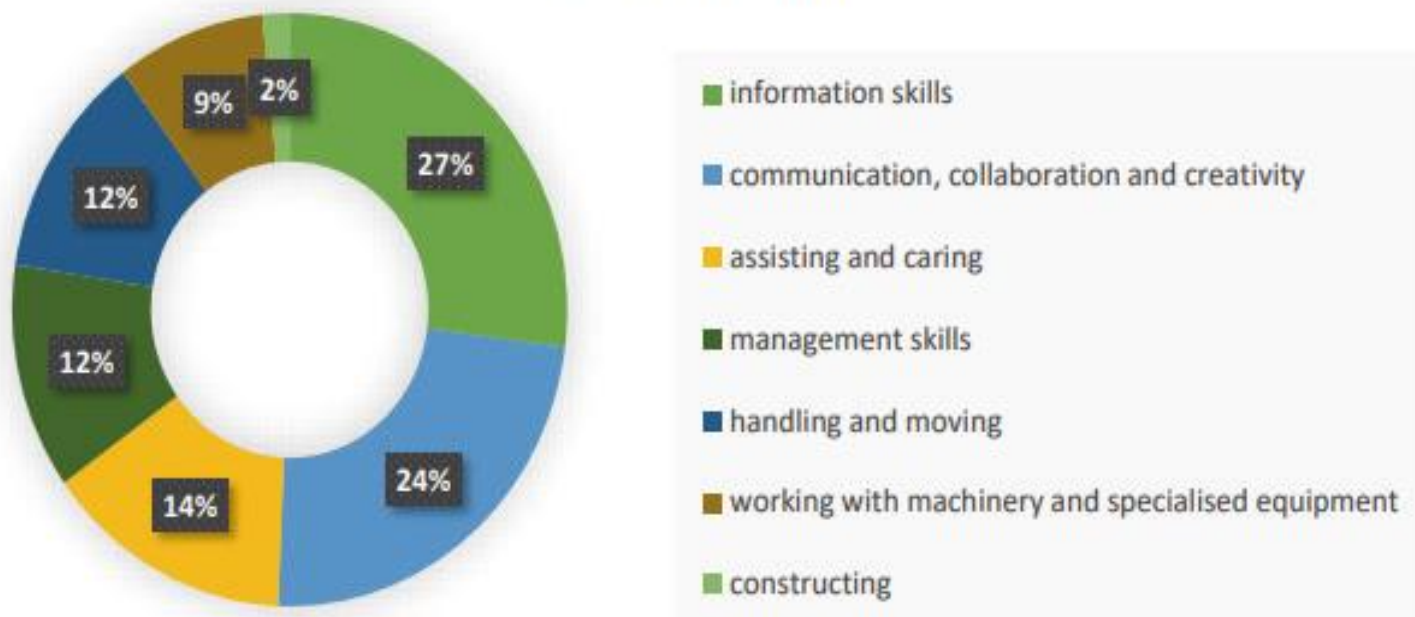


- Developing a new framework to assess the level of “Greenness” and “Digitalization” or its combination of the EU labour market occupations
- Exploring the positive shift in the demand for Green and Digital Skills during the last 5 years, as well as its trend and projections to 2035

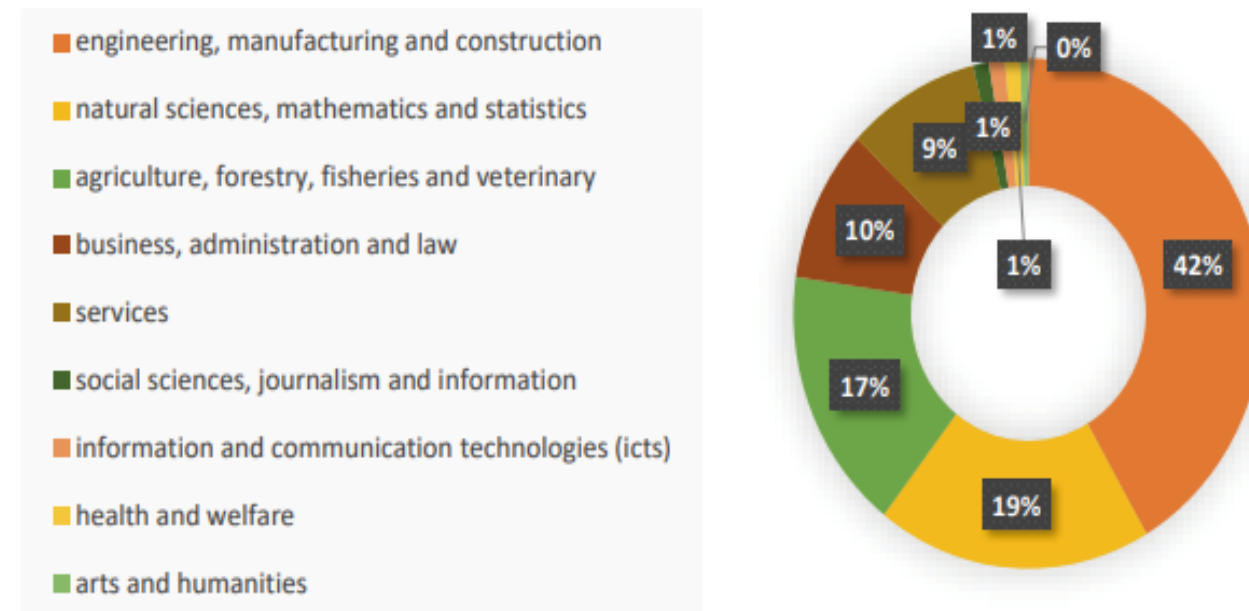
European Skills, Competences, Qualifications, and Occupations (ESCO) Framework

- ESCO framework is the multilingual classification of European Skills, Competences and Knowledge Concepts, following the International Skills Classification (ISCO).
- ESCO provides the relations between the Occupations and the Skills and Knowledges, e.g. which Skills and Knowledge concepts are relevant for the each of the occupations.

Green Skills



Green Knowledge Concepts



The New Set of Green Digital Skills

EU Policy ¹⁰	Sector (NACE Rev. 2)	Green Digital Skills	Green Digital Occupations
Corporate Sustainability Reporting (ESG)	All sectors	advising on environmental issues	environmental education officer
EU Taxonomy Regulation		analysing and evaluating information and data	environmental expert
EU Sustainable Finance Disclosure Regulation (SFDR)		complying with environmental protection laws and standards	green ICT consultant
EU Sustainable Investment Plan		computer use	natural resources consultant
Corporate Sustainability Reporting Directive (CSRD)		database and network design and administration	nature conservation officer
EU Action Plan on Financing Sustainable Growth		environmental sciences	sustainability manager
Environmental and Energy Policies			
European Green Deal	Agriculture, Forestry and Fishing	analysing and evaluating information and data	electric meter technician
EU Biodiversity strategy for 2030	Construction	complying with environmental protection laws and standards	electrical transmission system operator
Circular Economy Action Plan	Energy Supply	computer use	electricity distribution technician
Waste Framework Directive	ICT	database and network design and administration	energy assessor
Air Quality Directive	Manufacturing	designing electrical or electronic systems or equipment	energy systems engineer
Water Framework Directive	Transport and Storage	disposing of non-hazardous waste or debris	environmental education officer
Renewable Energy Directive	Water and Wastewater Treatment	electricity and energy	geothermal technician
Energy Efficiency Directive		environmental protection technology	green ICT consultant
EU Emission Trading System (EU ETS)		handling and disposing of hazardous materials	hazardous waste inspector
Just Transition Fund		maintaining electrical, electronic and precision equipment	irrigation technician
Connecting Europe Facility (CEF)		monitoring environmental conditions	recycling specialist
Fit for 55		operating agricultural or forestry equipment	smart home engineer
		using precision measuring equipment	smart home installer
Industry Policies			
EU Industrial Policy	Construction	analysing and evaluating information and data	acoustical engineer
Green Deal Industrial Plan	Energy Supply	analysing scientific and medical data	botanist
EcoDesign	Health and Social Care	complying with environmental protection laws and standards	ecologist
Critical Raw Materials Act	ICT	computer use	energy assessor
Chips Act	Manufacturing	database and network design and administration	energy systems engineer
	Mining and Quarrying	designing electrical or electronic systems or equipment	environmental education officer
		electronics and automation	green ICT consultant
		maintaining electrical, electronic and precision equipment	smart home engineer
		using precision measuring equipment	smart home installer

Ranking Green and Digital Occupations

<i>Green Occupations</i>	<i>Score</i>
energy assessor	90.909
natural resources consultant	78.788
energy conservation officer	75.000
environmental policy officer	75.000
energy analyst	70.833
environmental expert	70.588
hazardous waste inspector	69.697
recycling specialist	67.568
sustainability manager	65.278
environmental geologist	64.706
environmental protection manager	64.583
environmental education officer	64.000
forestry adviser	62.857
nature conservation officer	60.345
liquid waste treatment plant operator	60.000
<i>Digital Occupations</i>	
webmaster	98.837
software tester	96.154
user interface developer	93.878
ICT network administrator	93.684
database integrator	93.548
system configurator	93.478
database designer	93.069
mobile application developer	92.941
ICT network engineer	92.784
data warehouse designer	92.593
knowledge engineer	91.954
embedded systems software developer	91.892
integration engineer	91.860
web developer	91.837
ICT integration tester	91.667

<i>Green and Digital Occupations</i>	
smart home engineer	6.818
smart home installer	6.667
geothermal technician	4.878
green ICT consultant	4.762
irrigation technician	4.348
environmental education officer	4.000
acoustical engineer	3.846
electricity distribution technician	3.571
electric meter technician	3.571
energy systems engineer	3.448
ecologist	3.448
interior planner	3.333
electrical transmission system operator	3.333
pastry chef	3.226
botanist	3.125

Employment Growth of Green and Digital Skills

- Sector-specific regress Employment Growth Rate (from 2016 to 2022) on Green, Digital and Green & Digital Scores.

NACE Level 2	Green Score				Digital Score				Green and Digital Score			
	b	p value	n	R2	b	p value	n	R2	b	p value	n	R2
1.1 Administrative Services	0.06	0.04	9	0.31	0.05	0.34	9	0.07	-0.02	0.78	9	0.02
1.2 Arts and Recreation and other services	-0.03	0.23	9	0.09	0.05	0.03	9	0.28	0.07	0.04	9	0.67
1.3 Finance and Insurance	0.08	0.51	6	0.04	0.10	0.03	6	0.45	0.13	0.02	6	0.56
1.4 ICT	-0.07	0.69	7	0.02	0.11	0.00	7	0.57	0.10	0.03	7	0.46
1.5 Professional Services	-0.05	0.42	8	0.02	0.09	0.00	8	0.56	0.10	0.01	8	0.57
2.1 Construction	0.11	0.61	8	0.01	0.10	0.29	8	0.40	0.03	0.83	8	0.01
3.1 Accommodation and Food	0.11	0.18	8	0.10	0.07	0.02	8	0.43	0.05	0.12	8	0.17
3.2 Transport and Storage	0.11	0.00	9	0.51	0.02	0.63	9	0.02	-0.06	0.41	9	0.13
3.3 Wholesale and Retail Trade	-0.05	0.12	9	0.12	0.08	0.00	9	0.35	0.00	0.97	9	0.00
4.1 Manufacturing	-0.11	0.00	9	0.41	0.14	0.00	9	0.75	0.09	0.04	9	0.45
5.1 Education	-0.21	0.06	8	0.24	0.03	0.43	8	0.04	0.00	0.96	8	0.00
5.2 Health and Social Care	-0.09	0.00	9	0.43	0.09	0.00	9	0.52	0.04	0.20	9	0.08
5.3 Public Sector and Defence	-0.04	0.38	9	0.04	0.12	0.01	9	0.31	0.00	0.98	9	0.00
6.1 Agriculture, Forestry and Fishing	-0.14	0.00	8	0.64	0.11	0.00	8	0.46	0.08	0.19	8	0.18
6.2 Energy Supply Services	-0.04	0.51	9	0.01	0.09	0.03	9	0.55	0.10	0.01	9	0.51
6.3 Mining and Quarrying	-0.03	0.15	5	0.06	-0.07	0.21	5	0.14	-0.05	0.13	5	0.11
6.4 Water and Wastewater treatment	0.01	0.91	8	0.00	0.11	0.01	8	0.62	-0.01	0.82	8	0.00

Significant effect on employment growth in Art and Recreation, Finance and Insurance, ICT, Professional Services, **Manufacturing**, Energy Supply Services

Online Adds – The top Green and Digital Skills and Knowledge Concepts are among the most requested skills in online ads

<i>Occupations (Level 2)</i>	<i>Skills and Knowledge Concepts (Level 1)</i>	<i>Share In online Adds</i>
health associate professionals	information and communication technologies (icts)	9.5
	engineering and engineering trades	5.6
Information and communications technicians	information and communication technologies (icts)	49.4
Legal, social, cultural and related associate professionals	engineering and engineering trades	13.8
business and administration associate professionals	information and communication technologies (icts)	10.8
	information and communication technologies (icts)	19.3
Science and engineering and engineering trades associate professionals	engineering and engineering trades	30.1
Numerical and material recording clerks	information and communication technologies (icts)	19.5
Customer services clerks	information and communication technologies (icts)	14.7
General and keyboard clerks	information and communication technologies (icts)	12.5
	information and communication technologies (icts)	19.5
Other clerical support workers	information and communication technologies (icts)	15.4
	engineering and engineering trades	6.3
Agricultural, forestry and fishery labourers	engineering and engineering trades	3.2
Cleaners and helpers	information and communication technologies (icts)	1.1
Food preparation assistants	engineering and engineering trades	1.0
	engineering and engineering trades	1.6
Refuse workers and other elementary workers	engineering and engineering trades	4.4
	information and communication technologies (icts)	1.4
Street and related sales and service workers	information and communication technologies (icts)	16.3
Food processing, wood working, garment and other craft and related trades workers	engineering and engineering trades	6.0
	engineering and engineering trades	3.1
Market-oriented skilled agricultural workers	information and communication technologies (icts)	10.1
Market-oriented skilled forestry, fishery and hunting workers	engineering and engineering trades	9.9
Administrative and commercial managers	information and communication technologies (icts)	11.5
Chief executives, senior officials and legislators	information and communication technologies (icts)	26.6
Hospitality, retail and other services managers	information and communication technologies (icts)	29.5
Production and specialized services managers	information and communication technologies (icts)	44.1
Assemblers	information and communication technologies (icts)	28.8
	engineering and engineering trades	52.1
Drivers and mobile plant operators	engineering and engineering trades	4.0
Machine & plant operators	information and communication technologies (icts)	2.5
	engineering and engineering trades	18.4
health professionals	information and communication technologies (icts)	5.1
Information and communications technology professionals	engineering and engineering trades	2.8
Legal, social and cultural professionals	information and communication technologies (icts)	64.3
business and administration professionals	information and communication technologies (icts)	11.6
	information and communication technologies (icts)	29.7



2023

Twin Skills for the Twin Transition



DEFINING GREEN DIGITAL SKILLS AND JOBS



The transition is Complex, Difficult, Data & Science-hectic

THANK YOU

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Alliance of Excellence for Research and
Innovation on Aeiphoria
ae4ria.org



SDSN Global Climate Hub
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