



Flanders
State of
the Art

A green Skills roadmap for the climate transition in the energy intensive industry

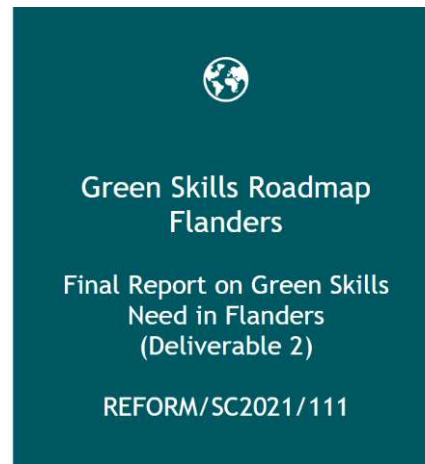
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Department of Work and Social Economy – Flanders (Belgium)

Green skills and jobs policy context

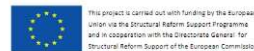


- ▶ The green transition will have a structural impact on the way we produce, consume and live.
- ▶ EU Green deal and Paris agreement require new regulation and investment in technology and innovation
- ▶ The transition to a low-carbon, resource efficient and green economy can only be made by having a workforce with the right skills
- ▶ Initial education won't be sufficient. Need for upskilling & upskilling of the current workforce
- ▶ Specific context for Flanders:
 - Human capital is Flanders' greatest resource
 - Labour market shortages

Towards a Green Skills Roadmap



Trinomics



Steunpunt Circulaire Economie, Rosa Hofgärtner
Werk en Vaardigheden in de circulaire textielindustrie in Vlaanderen, 2023

VIONA
Onderzoeksproject 'Een human capital roadmap voor het Vlaams Klimaatadaptatie plan, UAMS'

2022, Roland Berger	2023 Trinomics	2023 K.U.Leuven	2023 VIONA, UAMS
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The study



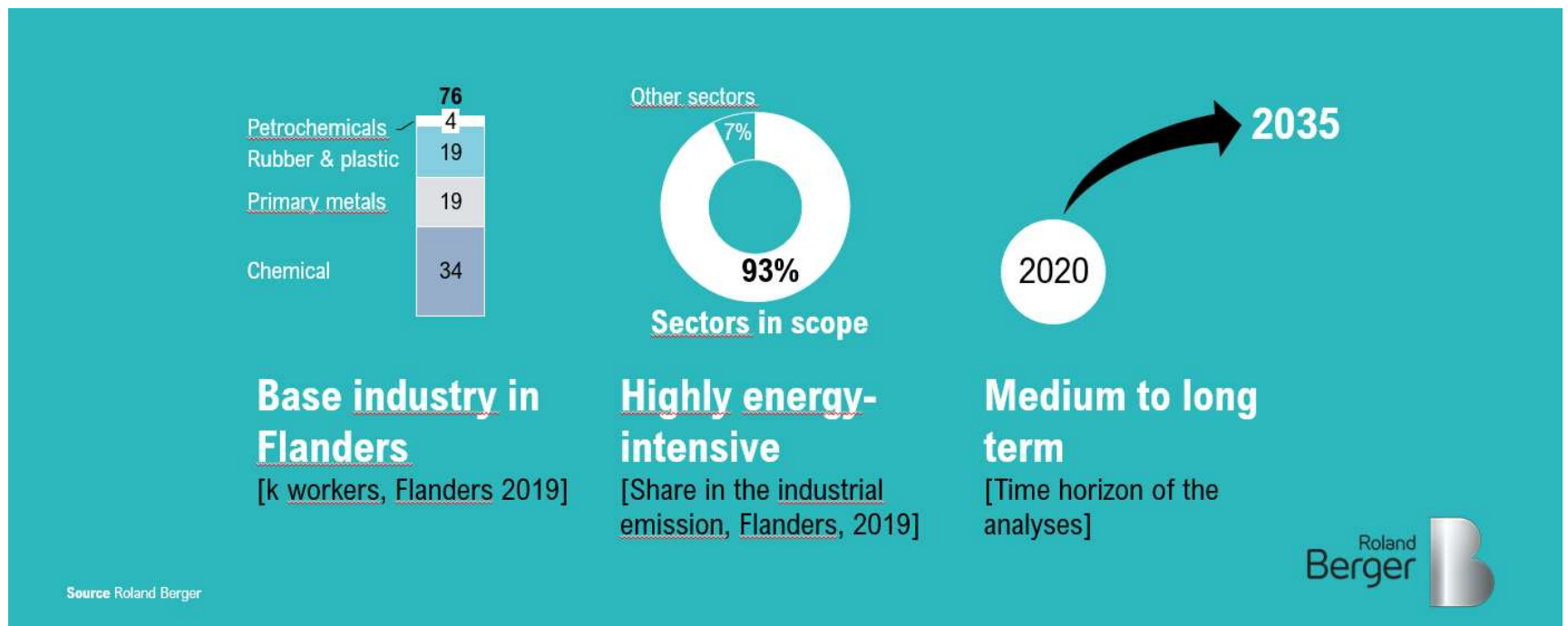
- ▶ Conducted in 2021 by Roland Berger on behalf of the Flemish government (Department of Work and Social Economy)
- ▶ Identified, for the first time, the concrete skills challenges facing the traditional energy-intensive industries (chemicals, petrochemicals, primary metals and rubber and plastics) in Flanders for the period 2020-35
- ▶ Built on an extensive literature review, quantitative analysis of several skill forecasting studies and interviews with more than 50 industry experts

<https://www.rolandberger.com/en/Insights/Publications/Skills-Roadmap-for-climate-transition-%5B2020-2035%5D.html>

The insights of +50 stakeholders from very diverse backgrounds were taken into account

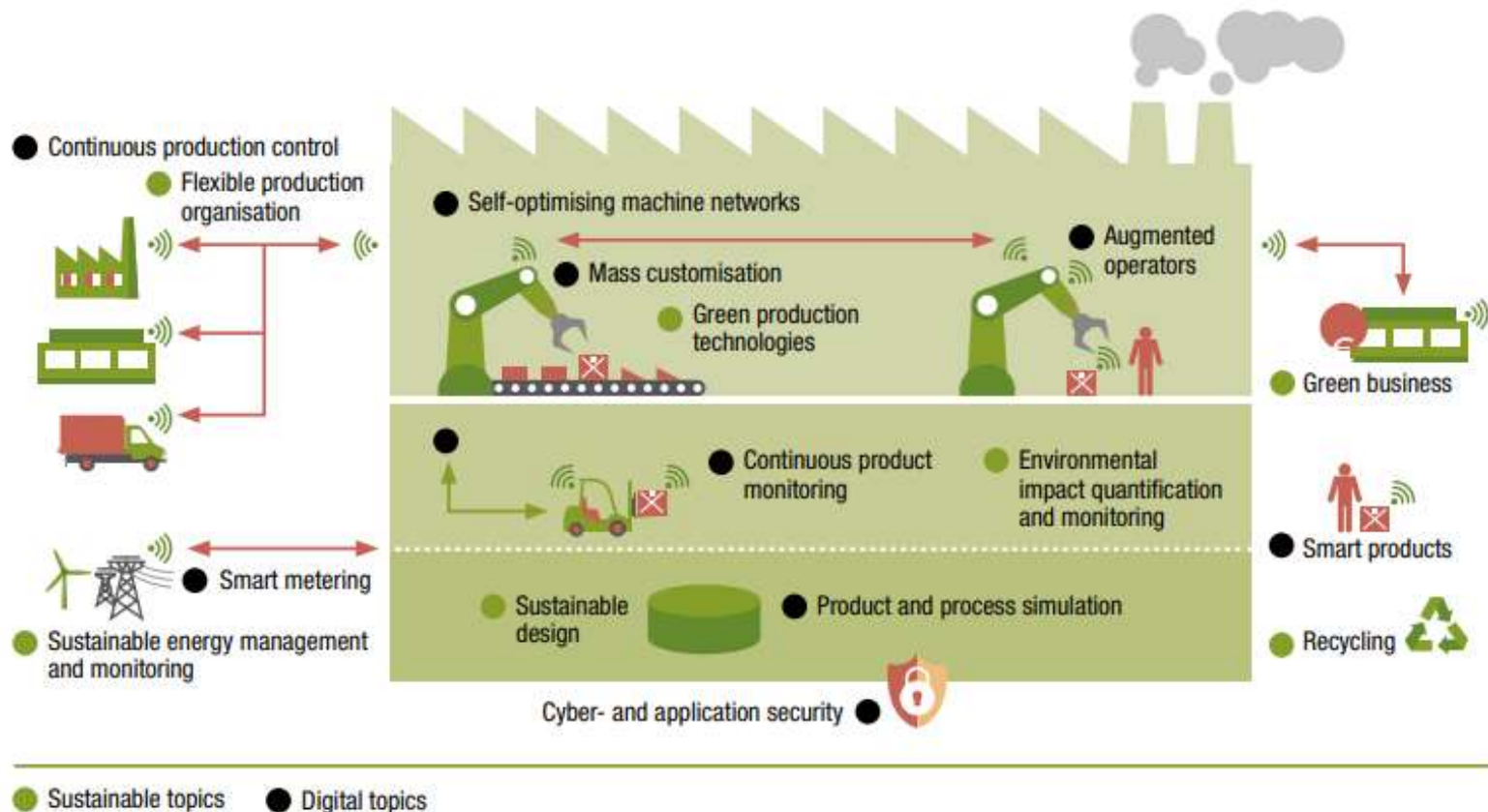


The Flemish energy intensive industry represents an interesting case of changing human capital needs

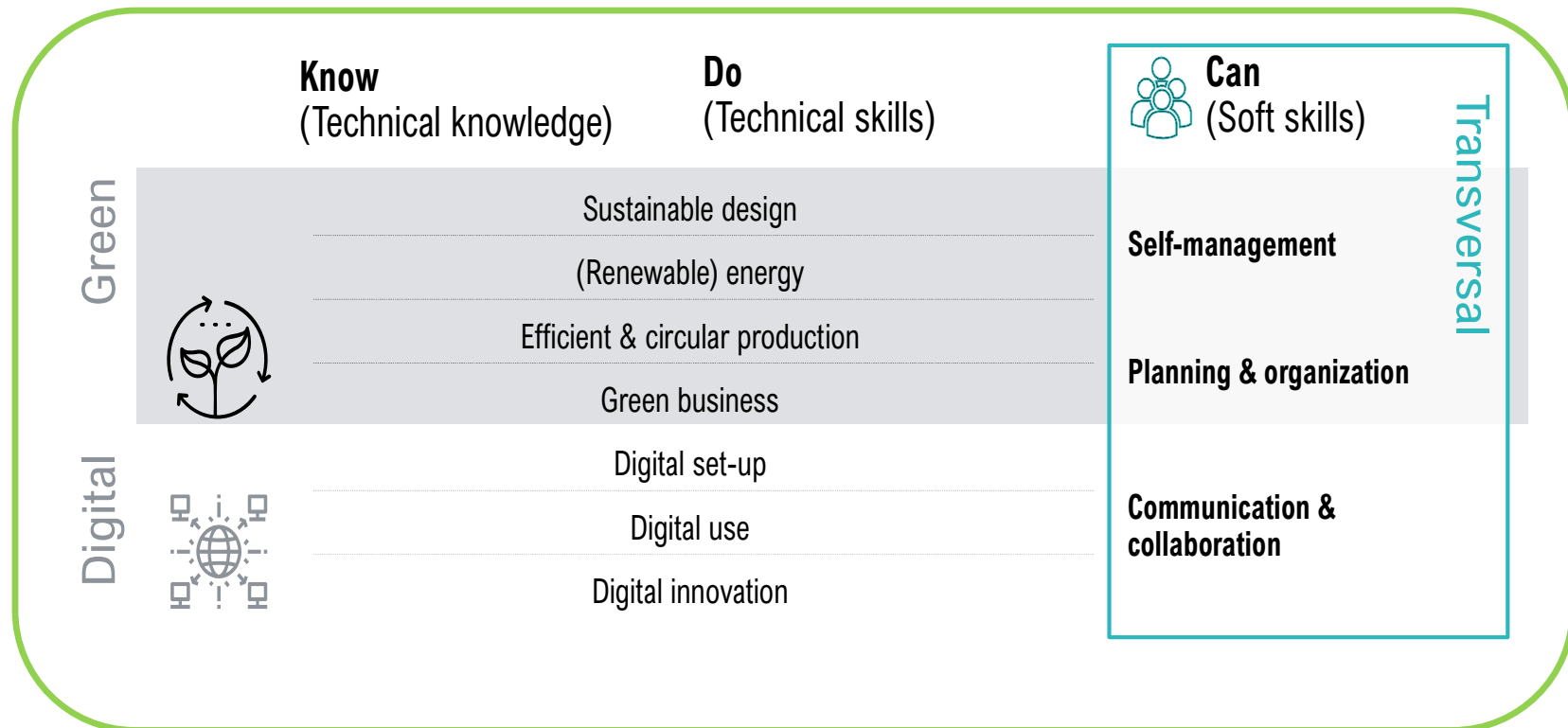


In the workplace of the future, the green and digital transition go hand in hand




‘Twin transition’



Competences on the workplace are a combination of knowledge, technical and soft skills



The most important skills needs for the energy-intensive industry

	 Know (Technical knowledge)	 Do (Technical skills)	
Green	Sustainable design	<ul style="list-style-type: none"> > Materials Science > Applied Chemistry 	<ul style="list-style-type: none"> > Sustainable & customer-oriented product and material design > Life Cycle Assessment
	(Renewable) energy	<ul style="list-style-type: none"> > (Renewable) energy technologies (e.g. electricity, green hydrogen) > Applied thermodynamics, mechanics and aeronautics 	<ul style="list-style-type: none"> > Application of energy efficiency techniques (e.g. insulation) > Integration of (renewable) energy technologies (e.g. electrification) > Sustainable energy management (demand vs. supply) & monitoring
	Efficient & circular production	<ul style="list-style-type: none"> > Innovative chemical production technologies: Ethane steam cracking, propane dehydrogenation, hydrogen electrolysis and steelanol method > Innovative steel production technologies: IGAR technology > CCS/U¹⁾ technology > Safety procedures (e.g. hydrogen storage) > Applied biology, chemistry and electromechanics 	<ul style="list-style-type: none"> > Integration of new production technologies > Implementation of safety procedures > Flexible production organisation > Lean manufacturing > Recycling techniques and reduction of waste flows > Environmental impact quantification & monitoring
 Green business	<ul style="list-style-type: none"> > Ecological context and sustainability principles > Economic and regulatory aspects of innovative production technologies > Circular economy sales models > Economic and financial modelling 	<ul style="list-style-type: none"> > Creating awareness for green transition > Opportunity identification and management in the circular economy > Selling products/services in the circular economy > Social impact analysis 	
Digital	Digital set-up	<ul style="list-style-type: none"> > Industrial IoT technologies (e.g. connectivity, smart metering, predictive maintenance) > Robotic process automation technologies > Cyber- & application security technologies 	<ul style="list-style-type: none"> > Setting up, maintaining and securing IT infrastructure > Setting up, maintaining and securing Industrial IoT > Setting up, maintaining and securing RPA²⁾
	Digital use	<ul style="list-style-type: none"> > Functionalities of peripheral devices > Functionalities of support programs 	<ul style="list-style-type: none"> > Basic digital work skills > Interaction with RPA bot > Use of predictive maintenance > Using smart metering > Using augmented reality
	Digital innovation	<ul style="list-style-type: none"> > Programming > Data science (e.g. AI) > Principles of process simulation / digital twins 	<ul style="list-style-type: none"> > Decision-making based on data analysis > Process reengineering and optimization based on process simulation / digital twins



Can

(Soft skills)

Transversal

Self-management

- > Responsibility
- > Critical & ethical thinking
- > Decision-making skills (based on data / supporting technologies)
- > Systems thinking / process thinking through the different steps of the production process
- > Creative and innovative thinking
- > Entrepreneurship
- > Willingness to learn

Planning & Organisation

- > Scenario thinking
- > Flexible planning & organisation
- > (Agile) project work

Communication & cooperation

- > Leadership
- > Transformation Management
- > Stakeholder Management
- > Coaching & training
- > Participative techniques
- > Multidisciplinary cooperation
- > Intercultural skills
- > Language in the workplace

1) Carbon capture and storage / usage; 2) Robotic Process Automation

Source: Departement Werk & Sociale Economie, Roland Berger

The skills challenges for the energy-intensive sectors in Flanders



Structural recruitment need for **c.30 k** workers



Attracting a **greater number of STEM** profiles



Need for upskilling in basic **digital work skills** for **c.49 k** workers



Sector-specific training capacity **limited to c.11 k** students per year



Workforce surplus limited to **three points in time** (total of **c.900** workers)



Need for upskilling in **green themes** for **c.59 k** workers



Need for upskilling in **soft skills** for **c.67 k** workers



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Actions for policy makers & sector associations – Three objectives to be achieved to respond to the skills challenges

Skills roadmap for the Flemish climate transition [2020-2035]

Objectives



Increasing the influx of STEM graduates



Improving the value proposition towards employees



Increasing the upskilling capacity for job seekers & employees

Examples of existing initiatives



Opportunities

Tuning
Under-addressed groups
Little focus on lateral entry

Perception improvement
Potential outside focus sectors
Scaling up initiatives

Making more use of the strengths of individual players
Structured collaboration between education and employers
Uniform quality recognition
Green and digital themes



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Concrete case: chemical operators will need to upskill in green, digital and soft skills

Skills type	Important skills for chemical operators in 2035
Green skills	Applying energy-efficiency techniques
	Implementation of security procedures
Digital skills	Basic digital skills
	Use of smart metering
	Use of augmented reality
Soft skills	Flexible planning and organisation
	Decisiveness (based on data/assistive technologies)
	System thinking/process thinking through the different steps of the production process

Concrete case

The greenification of an existing training module in the chemical sector



What is ACTA?

- ▶ a technical training centre for the chemical industry near the port of Antwerp
- ▶ target group: employees, teachers, students, the unemployed.
- ▶ A chemical plant (400 m²) for training and observation of learners

Chemical process techniques (CPT) programme

- ▶ prepares young people in 1 year to become a process operator in the chemical industry.
- ▶ Collaboration between education and the chemical industry
 - The secondary schools: theoretical training
 - Chemical company: apprenticeship
 - ACTA: 7-day training module (distillation, flow, pressure, pumps, measuring devices and steam generators)

Concrete case: some examples

- ▶ game at the distillation column



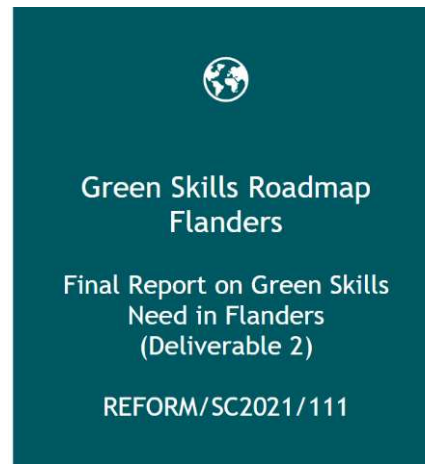
→ make ecological impact visible and increase awareness

- ▶ VR quest 'search for green crimes'

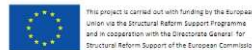


→ learn to detect spills or leakages

Towards a Green Skills Roadmap



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Ongoing initiatives to accelerate the green transition on the labour market

Uitbouwen van netwerk
vb Actie-netwerk Energie
intensieve sectoren,
hefboom jobs en
vaardigheden Vlaanderen
circulair

Vernieuwen/innovatie
Pilot
Renovatie-strategie
Intersectoraal samenwerken
rond Green jobs & skills

Beleidsvoorbereiding
Roadmap Green Skills
Flanders (Reform Support)

**Ondersteunen van
ondernemingen**
Competentie checks voor
bedrijven

Sensibilisering
Event Levenslang Leren
twin-transition
12/12/2023

Aanpassen aanbod
Vb Projecten “Opleiding van
de toekomst” in uitrol,
tenders opleidingen VLAIO

Standpunten opbouwen, ook Europees vb NZIAP

Questions?



<https://www.cedefop.europa.eu/en/events/2021-joint-cedefopoecd-symposium-apprenticeships-greener-economies-and-societies>

<https://www.vlaanderen.be/publicaties/skills-roadmap-voor-de-vlaamse-klimaattransitie-focus-op-de-energie-intensieve-sectoren-2020-2035>

<https://www.rolandberger.com/en/Insights/Publications/Skills-Roadmap-for-climate-transition-%5B2020-2035%5D.html>

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