

The minerals sector perspective in education & training

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The future of education and skills in the raw materials sector

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IMA in a nutshell

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Minerals: Enablers of multiple value chains

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EU: Skills agenda

4

Job-profile changes in the minerals sector

5

Take away messages

1. In a Nutshell: Industrial Minerals Association



= Umbrella of
10 associations



IMA represents

250

member companies

685

mines and quarries

750

processing plants

**180
million**

tons of minerals
produced per year

42,500

people employed in
28 European countries
(30 million jobs in
downstream industries)

**€14
billion**

annual contribution
to Europe's GDP

2. Minerals: Enablers of multiple value chains



GLASS

100% minerals

Silica sand, Dolomite, Calcium carbonate, Lime, Feldspar, Borate



CERAMICS

100% minerals

Feldspar, Clay & Kaolin, Lime, Talc, Silica



PAPER

up to 50% minerals

Calcium Carbonate; Talc, Kaolin, Bentonite



Smartphone
up to 60% minerals

Cover - resistant, lightweight, fire-proofed and recyclable Carbonates, Mica, Talc

Battery - Calcium carbonate, Silica sand, Clays

Reinforced Steel - Silica sand, Andalusite, Lime

Glass - 47 g Silica sand

2. Minerals: Enablers of multiple value chains



HOUSE

up to
150 t of
minerals

Cement (Clay, Lime, Silica sand), Plaster & Plasterboard (Gypsum, Hydrated lime, Calcium carbonate), Insulation (Perlite), Ceramics, Bricks & Tiles, Glass, Paint etc.



CAR

up to
150 kg of
minerals

Rubber (Talc, Calcium carbonate), Plastics (Talc, Calcium carbonate, Kaolin, Silica sand), Glass (Silica sand, Dolomite, Calcium carbonate, Lime, Feldspar, Borate), Casting (Bentonite, Silica sand), Foundry (Silica sand)

2. Minerals: Enablers of infrastructure

Expansion & Maintenance



1 km **Highway** = c. **216,000 t** of minerals*



1 km **National** = c. **87,000 t** of minerals*



1 km **Railway track** = c. **35,000 t** of minerals**

For Steel: Lime, Silica sand, Bentonite



1 km **Cycle track route** = c. **11,000 t** of minerals*

2. Minerals: Enablers of Decarbonisation

Infrastructure & Energy generation

Wind Power



Turbine blades

Advanced plastic & Fiberglass, Silica sand, Limestone, Borax, Feldspar, Nepheline Syenite, Magnesite, Kaolin and Clay

Turbine high tower (140m)

c.120t of steel → **minerals:** Limestone, Bentonite and Silica sand



Turbine tower foundation

c.600 m³ of concrete + c.70 tons of reinforced steel
→ **minerals:** Lime and limestone, Aggregates and Bentonite

3. EU Skills agenda



The new European Skills Agenda builds upon the ten actions of the Commission's [2016 Skills Agenda](#). It also links to the

- [European Digital Strategy](#)
- [Industrial and Small and Medium Enterprise Strategy](#)
- [Recovery Plan for Europe](#)
- [Increased support for youth employment](#)

Five building blocks:



1. **Calls for collective action, mobilising business, social partners and stakeholders**, to commit to working together, in particular within the EU's industrial eco-systems



2. Defines a clear **strategy** to ensure that **skills lead to jobs**



3. Helps **people build their skills throughout life** in an environment where lifelong learning is the norm



4. Set **ambitious objectives for up- and reskilling** to be achieved within the next 5 years



5. Identifies the **financial means to foster investment in skills**

4. Societal changes vs labour adaptations



BABY BOOMERS

1946 - 1964

Boomer

Work ethic (17%)
Respectful (14%)
Values/Morals (8%)
"Baby Boomers" (6%)
Smarter (5%)



GEN X

1965 - 1980

Gen X

Technology use (12%)
Work ethic (11%)
Conservative/Traditional (7%)
Smarter (6%)
Respectful (5%)



MILLENNIALS

1981 - 1995

Millennial

Technology use (24%)
Music/Pop culture (11%)
Liberal/Tolerant (7%)
Smarter (6%)



GEN Z

1996 - 2010



4. The labour market changes in time

Post 2nd world war (1945+):

- Education nearby home
- Steady job environment/conditions
- You learn at the job-site
- The beginning of automation in industry
- Most employees one employer in a lifetime

Some of the causes of change:

- European Union
- ERASMUS
- Mobility
- Connectivity
 - More possibilities
- Job profile description more complex

Millennials (1981-1996):

- Longer education nearby home combined with abroad studies
- Dynamic job environment/conditions
- You are trained at the job-site
- The beginning of digitalization in industry
- Most employees change multiple jobs/sectors often

4. Mineral sector: Why people join/stay?

- The family connection (from Mother/Father to Son/Daughter);
- The minerals sector companies known during studies;
- Dynamic sector where one mineral enables multiple applications;
- Moving to another application, gives the perspective on another sector;
- Continuous training to boost retention and possibility to grow professionally;
- Sometime people leave and they come back;
- ...

4. Talent Development & Retention (1/2)

1. Education:

- Companies build curricula's with Schools/Universities
- Identify and motivate talent development
- Create network for future employment opportunities
- Examples: Belgium, France, Rumania, Scandinavia ...



2. Training on the job site:

- Coaching
- Continuous training
- Professional development
- Multiple trainings per year in each company





3. Anticipate upcoming profile needs:

1. At company level
2. Multiple sector challenges
3. Participation in multiple EU projects addressing vocational educational training (VET)
 - Skills Alliance for Industrial Symbiosis ([SAIS](#))

Scope: Enable and accelerate uptake of Industrial Symbiosis and energy efficiency by developing a comprehensive cross-sectorial* blueprint for skills.

SPIRE-SAIS project aims to develop:

- Develop an **industry-driven and proactive skills strategy** that will assist the wider implementation and exploitation of industrial symbiosis and energy efficiency principles for eight SPIRE sectors*;
- **Address possible skills shortages in the eight industries*** while providing EU citizens with the necessary skill sets for future job profiles.
- The project will **address updating of the curricula, qualifications, knowledge and skills** that are required to support essential cross-sectoral collaboration in **Industrial Symbiosis and Energy Efficiency**.

* 8 sectors: chemicals, steel, engineering, non-ferrous metals, minerals, water, cement, and ceramics

5. Take away messages

1) Education is the first step to a job profile & position

Education supported by on-site learning and continuous training are success factors for long retention of employees

2) Minerals sector transition needs new skills

Dynamics of job profiles and matching of Industrial sector needs

3) Company action to innovate and motivate employees

Long life learning is an opportunity to evolve in the job position

4) A sector does not act alone in job profile evolution, but value chain action is necessary to create cross value chain opportunities

Cross sectoral action is needed to implement successfully the EU pact for skills and respond to upcoming policy challenges



Imagine the Future with Industrial Minerals **2050 Roadmap**

Together for a Sustainable Future

IMAGINE
THE FUTURE
WITH INDUSTRIAL MINERALS

For further information...



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