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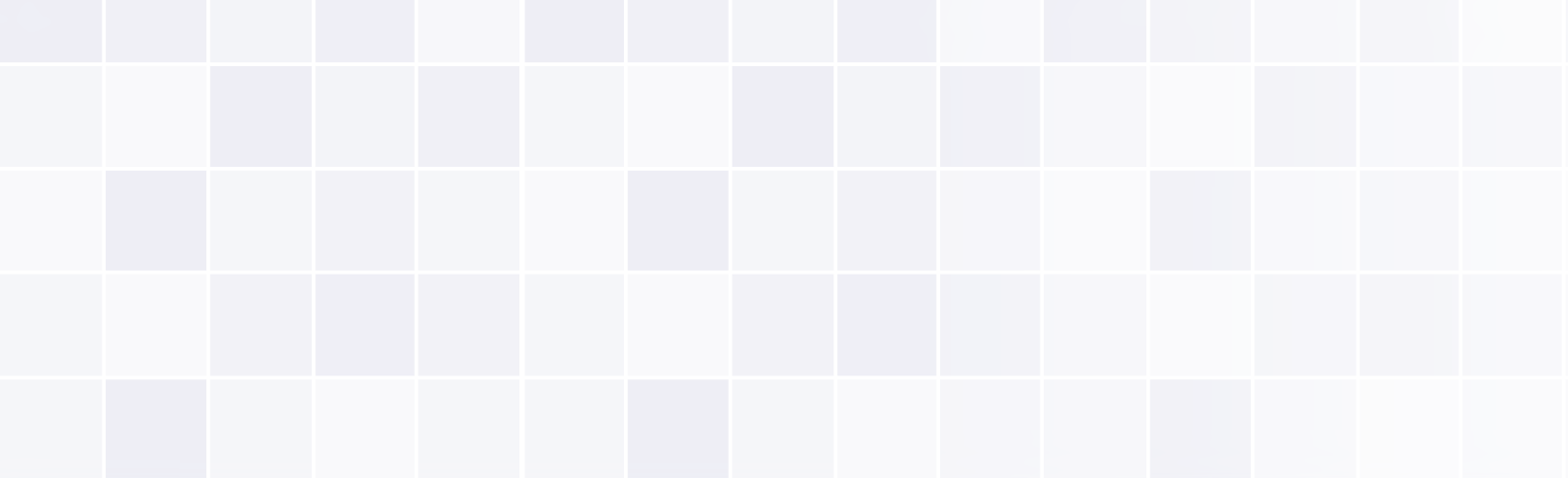


# A Blueprint for Sectoral Cooperation on Skills

(Wave II)

Responding to skills  
mismatches in  
six new sectors:

Additive manufacturing  
Green technology and renewable energy  
Construction  
Maritime shipping  
Paper-based value chain  
Steel



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# Introduction

**Globalisation and technological change are transforming our lives at unprecedented speed, creating a wealth of new opportunities for Europe's economy, businesses and citizens.**

Countries can produce more for less by specialising in what they do best and exploiting economies of scale in global markets. And it is not only large companies that benefit from this process. 80 % of European exporters are small and medium-sized enterprises (SMEs) and every 1 billion euro of exports supports 14 000 jobs.

Nevertheless, these benefits are neither automatic nor evenly distributed. The costs are often localised and some industries and regions are especially affected.

The demand for skilled labour has increased but the number of jobs for those with lower level qualifications has shrunk, particularly in manufacturing. Displaced workers struggle to find jobs, especially when this means acquiring new skills.

The divide between more and less advanced regions risks widening, unless the necessary mechanisms are in place to promote high quality education, training and lifelong learning.

In 2016, the European Commission launched a New Skills Agenda for Europe to improve skills and keep pace with the changing needs of the labour market and society<sup>1</sup>.

The Blueprint for sectoral cooperation on skills brings together businesses, trade unions, education and training institutions and other stakeholders to develop skills strategies and solutions to help specific sectors grow, innovate, create high quality jobs and contribute to Europe's prosperity.

The initiative is well underway. Following a successful pilot phase launch in 2017, the selected projects started work in January 2018. The Commission is now going ahead with Wave II of the Blueprint and, based on proposals by sectoral services, has selected additional sectors. They are construction; steel; the paper-based value chain; green technology and renewable energy; additive manufacturing; and maritime shipping. In this report, we set out an updated process for developing a Blueprint for sectoral cooperation on skills and present challenges and opportunities facing the sectors approved for Wave II.

“In a fast-changing, global economy, skills are key to boosting Europe's competitiveness and to ensuring fair and inclusive societies. As a key action of the New Skills Agenda for Europe, the Blueprint brings together businesses, trade unions, education and training institutions and other stakeholders to help close the skills gaps in their respective sectors. Having the workforce with the right skills will help us harness globalisation and technological progress. Together with my fellow Commissioners, I warmly invite other sectors to join this initiative in the future.”



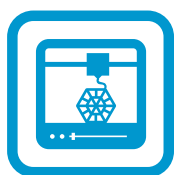
**Marianne Thyssen**  
European Commissioner for Employment, Social  
Affairs, Skills and Labour Mobility

For the latest news and updates,  
please visit <http://europa.eu/lgc96YU>

## Two steps to match skills to sectors' needs

The Blueprint for sectoral cooperation on skills fosters sustainable partnerships among stakeholders to translate a sector's growth agenda into a comprehensive skills strategy to address skills needs.

### Six sectors selected for Wave II



ADDITIVE  
MANUFACTURING



GREEN  
TECHNOLOGY  
AND RENEWABLE  
ENERGY



CONSTRUCTION



MARITIME  
SHIPPING



PAPER-BASED  
VALUE CHAIN



THE STEEL  
SECTOR

The Blueprint will be extended to additional sectors in future.

## 1. Launching an EU-wide partnership on skills

In this phase, the Commission supports the work of sectoral partnerships at European Union (EU) level.

Each partnership will develop a sectoral skills strategy to support the objectives of the overall growth strategy for the sector and match the demand and supply of skills. Partners will look into how major trends, such as global, societal, and technological developments, are likely to affect jobs and skills needs, as well as their potential impact on growth, competitiveness and employment in the sector (e.g. restructuring, hard-to-fill vacancies). Next, they identify priorities and milestones for action and develop concrete solutions.

The partnership will:

- Revise or create occupational profiles and the corresponding skills needs, drawing on the classification of European Skills, Competences, Qualifications and Occupations (ESCO)<sup>2</sup> and existing competence frameworks;
- Update or create curricula while promoting sectoral qualifications and certifications;
- Promote the benefits of choosing a career in the sector and foster gender balance;
- Promote job-seeker and student mobility across Europe in the sector, capitalising on the use of existing EU tools<sup>3</sup>;
- Identify successful projects and best practices, including effective use of EU funding;
- Design an industry-led action plan for the long-term roll-out of the strategy and its results and ensure sustained cooperation among stakeholders at European, national and regional levels.

The platforms will build on European tools relating to skills and qualifications<sup>4</sup>.

### Funding the European partnership

After the European Commission decides to go ahead with the Blueprint in a particular sector, sectors can apply for funding to launch the EU-wide partnership on skills. The decision is based on reflection on how the sector is organised and takes previous work into account. For example, the Commission could launch calls for tender on sectoral studies. Or, sectoral stakeholders could apply for projects under Erasmus+ Sector Skills Alliances (E+ SSA) Lot 1. Alternatively, work could be taken forward within existing structures at EU level, such as high-level groups or sectoral dialogue committees.

On 25 October 2017, the Commission made available a specific opportunity for the six chosen sectors in Lot 3 of the Erasmus+ call for proposals on Sector Skills Alliances<sup>5</sup>. The call earmarks €4 million per sector to cover up to 80 % of eligible costs over a 4-year period. Only one European Alliance per sector will be supported. It must ensure good coverage of EU Member States and be representative of the sector. It must be led by representatives of the industry (e.g. companies, chambers or trade associations) and include education and training providers. The presence of social partners and public authorities is highly encouraged.

## 2. Roll-out at national and regional level

**Building on the results achieved at EU level, the Blueprint will be rolled out at national and regional level, in cooperation with national and regional authorities and stakeholders.**

The members of the EU partnerships and the Commission will engage in awareness raising activities to rally all interested national and regional stakeholders and ensure widespread involvement.

The main tasks of national/regional partnerships will be to:

- Implement the EU-level sectoral skills strategy and action plan recommendations, while adapting them to national contexts and priorities;
- Implement business-education-research partnerships on the ground, including in the context of smart specialisation<sup>6</sup>;
- Raise awareness and share results widely to influence EU, national and regional policies, initiatives and intelligence tools.

### Funding the roll-out at national and regional level

The roll-out needs to be financed at national and regional level. EU Structural and Investment Funds<sup>7</sup> (ESIF) could support Step 2 of the Blueprint, but this would require a decision by the relevant managing authorities. The EU partnerships will look into replicable models to facilitate the use of EU funding to support this step. Other public and private funding should also be used.

#### When is a sector ready for a Blueprint?

In order to be supported, sectors must demonstrate all partners' commitment to the project. They must also have a mature sectoral growth strategy in place, with a clear link to EU policy priorities.

# Blueprint projects from the pilot phase

In 2017, the following five Blueprint projects were selected for EU co-funding, with a budget of nearly €20 million.



## Automotive sector

Development and Research on Innovative Vocational Education Skills (DRIVES)

The project will deliver human capital growth solutions for the automotive industry, covering all levels of the value chain. It will build on the GEAR 2030 project and create tools to reduce future skills gaps and shortages, enhance the recognition of formal and informal automotive education and adapt the apprenticeship marketplace to the sector's needs.

Coordinator: Vysoka Skola Banska - Technicka Univerzita Ostrava

### Find out more:

<http://europa.eu/!kf94Fc>



## Maritime technology sector

Maritime Alliance for fostering the European Blue economy through a Marine Technology Skilling Strategy (MATES)

The project will assist the maritime sector to cope with change, with a new strategy to tackle skills shortages and increase labour market resilience. The strategy will build on a series of pilot case studies, as a platform for a long-term action. Although the project will focus primarily on shipbuilding and offshore energy value chains, the variety of stakeholders and activities affected demand a broad, inclusive approach. Combined efforts by education, science and industry bodies will widen perspectives on knowledge and skills, and contribute to improved maritime career opportunities.

Coordinator: Centro Tecnologico Del Mar - Fundacion Cetmar

### Find out more:

<http://europa.eu/!Vc74JV>



## Space data (geo information) sector

Towards an innovative strategy for skills development and capacity building in the space (geo information) sector supporting Copernicus User Uptake (EO4GEO)

The EO4GEO Sector Skills Alliance will help to reduce the skills gap between the supply of and demand for education and training in the geospatial sector. The project fosters the adoption and integration of geospatial data and services in end-user applications. The Alliance will develop innovative multidisciplinary solutions for education and training to respond to the needs of students, professionals and business representatives and to maximise the integration of Copernicus data in services for government, businesses and citizens.

Coordinator: Gisig Geographical Information Systems International Group Associazione

### Find out more:

<http://europa.eu/!Br87RR>



## Textile/clothing/leather/footwear (TCLF) sector

Skills 4 Smart TCLF Industries 2030 (S4TCLF)

The Skills4Smart TCLF 2030 project constitutes the first step towards a new, dynamic sustainable community of diverse private and public organisations, committed to skills development and employment opportunities in the textile, clothing, leather and footwear (TCLF) sector. The project will develop an industry-led “TCLF Skills Strategy” which will be followed by the creation of new TCLF job profiles and new training opportunities. The project will bring together networks of training providers and EU Regions who will continue the activities beyond the project. Skills4Smart TCLF aims to attract young people to the sector by providing clear guidance on study and employment options.

Coordinator: European Apparel and Textile Confederation

### Find out more:

<http://europa.eu/!fp86Jq>



## Tourism sector

The Next Tourism Generation Alliance (NGT)

The Next Tourism Generation Alliance project will provide skills development products and tools to strengthen links between industry and education providers. The project will deliver products for professionals, trainers, students, university tourism departments, regional and local authorities, and companies to respond to changing sector skills needs. A new long-term human resource strategy will offer flexible training scenarios for businesses and provide clearly structured career pathways. The Tourism Skills Toolkit will provide stakeholders with a suite of skills assessment and profiling tools and new learning resources.

Coordinator: Federturismo Confindustria

### Find out more:

<http://europa.eu/!mY79cW>

## ADDITIVE MANUFACTURING

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# Why a Blueprint for cooperation on skills in additive manufacturing?

**A Blueprint for cooperation on skills in additive manufacturing (AM) will address the skills shortages and mismatches in the sector.**

The link between education and training, research and business is paramount to address this gap. The EU will help to coordinate action in this area.

AM is a breakthrough advanced manufacturing technology and will be crucial for the Europe's industrial renewal. It refers to a group of processes to build physical objects directly from 3D Computer-Aided Design (CAD) data. AM adds liquid, sheet, wire or other powdered materials to form component parts or products, usually in a layer-by-layer process (e.g. 3D-Printing) as opposed to subtractive manufacturing methodologies.

The AM industry includes Original Equipment Manufacturers (OEM), material suppliers and producers of a wide range of consumer and industrial goods. This industry spans several sectors, such as industrial machinery, aviation, health, tools, metal fabrication, electronics.

The global 3D printing industry is expected to grow in revenue from €3.5 billion in 2014 to €11 billion by 2018 and more than €18 billion by 2020<sup>8</sup>.

Additive manufacturing will change the face of production and consumption and is likely to create highly skilled jobs and local manufacturing, offering the opportunity to bring some outsourced jobs back to Europe.

Additive manufacturing will have radical consequences for Europe's workforce. According to some reports, the number of global job advertisements calling for 3D printing skills increased by over 1.8 % between August 2010 and August 2014, with industrial engineers, mechanical engineers, software developers and industrial designers among the most sought-after professionals. The newly created niche markets will also generate indirect employment in addition to these high-skilled jobs.

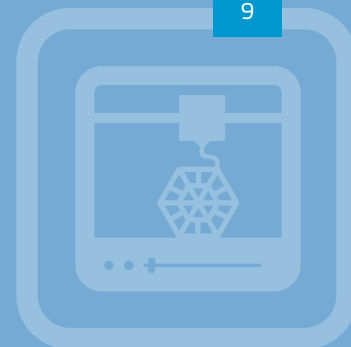
There is a significant untapped potential for new jobs in the EU's businesses, from start-up to enterprise-level. Small and medium-sized enterprises (SMEs) will be instrumental in developing the AM industry, because they are in a position to adapt fast to market changes. In addition, the immediacy of AM design and production will lead to new business models.



Skills are the basis of an innovative entrepreneurial culture. Yet, far too often start-ups and scale-ups find it difficult to find and recruit people with the skills that they need. This is especially the case for those with IT and advanced technology skills. We need a massive upskilling and reorientation of our workforce.



**Carlos Moedas**  
European Commissioner for Research,  
Science and Innovation



### Find out more

#### Report on AM in FP7 and Horizon 2020:

<https://publications.europa.eu/s/dD53>

#### European Commission report on the 3D-printing sector:

<http://europa.eu/!vq38dp>

## What can the Blueprint achieve?

The Blueprint provides a platform for cooperation among stakeholders, research institutes, education, qualification and training providers, as well as public authorities at national and regional levels to:

- Assess the skills mismatches between industry needs and the content of education programmes (this analysis will reveal the sector's current and future occupational skills needs);
- Establish long-term cooperation between stakeholders and different sectors at European, national and regional level;
- Update or create new curricula while promoting AM careers, sectoral qualifications and certifications, mobility and skills diversity;
- Deploy new and innovative education and training approaches for skills and competences;
- Launch campaigns for lifelong training;
- Promote sectoral partnerships and effective use of funding at national and regional levels.

### Links to other related projects and initiatives

Activities must be compatible with existing evidence for the sector. EU funding for research and technological development has been important to the growth of additive manufacturing technologies in Europe. Over ten years, European projects have made a vital contribution to the sector's growth to maturity. During this time, Framework Programme 7 (FP7) and Horizon 2020 have contributed some €250 million to more than 80 AM projects<sup>9</sup>.

These projects have developed a wide range of materials, new technologies and applications, e.g. aeronautical, medical, ICT, bio-printing, industrial processes. However, there is a gap between the pace of invention and workers' adoption of new technologies. Therefore, skills have become a priority in this sector.

The Horizon 2020 project AM-motion<sup>10</sup> is drafting a European strategy and a roadmap on additive manufacturing and 3D-printing. The consortium is working closely with employment agencies and educational institutions in order to complete a systematic assessment of skills shortages.

The Blueprint partnership will build on the work by Skills Alliance projects, financed by Erasmus+. They included '3DPrism'<sup>11</sup>, which focused on 3DPrinting and Metals<sup>12</sup>; 'Machine Tools Alliances for Skills', which focused on the use of metal in AM; and other Erasmus+ cooperation projects<sup>13</sup>.

Links with initiatives such as the Digital Skills and Jobs Coalition<sup>14</sup>, the European Institute of Innovation and Technology (EIT) actions<sup>15</sup>, Member States initiatives and COSME tools<sup>16</sup> are also important.

## GREEN TECHNOLOGY AND RENEWABLE ENERGY

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# Why a Blueprint for cooperation on skills in green technology and renewable energy?

Green technology and renewable energy underpin the modernisation of Europe's economy, based on sustainable jobs, growth and investment.

Europe strives to become a global leader in renewable energies. The EU's renewable energy industry employs around 1.1 million workers and European companies secure one third of all renewable technology patents. Around 4.3 million people work in the sectors (2 % of EU employment).

The EU's Energy Union Framework Strategy (2015) sets out to decarbonise the economy. In 2016 the European Commission adopted the "Clean Energy for All Europeans" package of measures towards the EU's 2030 energy and climate targets. They include commitments to reduce greenhouse gas emissions by 40 %, to achieve energy savings of 30 % and to increase the share of renewable energy to at least 27 %. These targets also contribute to international climate commitments under the 2015 Paris Agreement.

As part of the Clean Energy package, the Commission proposed a recast of the Renewable Energy Directive from 2020 onwards, with measures for the next stage of renewable development in the electricity, heating/cooling and transport sectors.

The 2016 EU Heating and Cooling Strategy found expertise shortages across all green technology and renewable sectors<sup>17</sup>. It is time for a skills upgrade to deploy new technologies and solutions and to nurture new types of businesses, jobs, products, services and markets. Skills shortages also stand in the way of adopting technologies. The share of renewables in the electricity, heating and cooling sectors needs to double from current levels by 2030 and further action is required to decarbonise transport too. Better access to commercially viable new technology, products and services is essential in order to integrate renewables into Europe's energy, industrial, building and transport infrastructures. A major push will help to deploy renewable energy for electricity, heating, cooling and transport. Skills to produce, install, operate and use green and renewable technologies need to be matched by innovation in order to bring technologies to market.

The Blueprint focuses on renewable energies and green technologies in the sectors of heating and cooling, transport, electricity and renewable energy infrastructures. In line with the needs of the EU post-2020 renewable framework, an overhaul of skills is overdue (especially with regard to renewable heating and cooling technologies, advanced biofuel and electric mobility, and renewable electricity generation). Demand for skills also arises from the rollout and the need for new smart and digitalised energy infrastructures at micro, small scale, and district levels. That is why each of the priority areas has a strong digitalisation component.

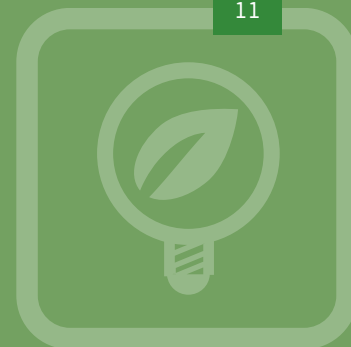
The number of people employed in the 10 renewable energy supply sectors increased from 1.1 million to 1.14 million in 2015. Combined turnover also increased from €143.6 billion to €153 billion. The employment generation potential is therefore very significant and the new Blueprint will support the expansion of the renewable energy sector and of the low-carbon economy.



We need to stimulate the right skills for the jobs of the future. In the energy transition, some sectors – for instance, renewable energy and green technologies – will boom while others may face difficulties. We should therefore link up the Energy Union with the Skills Agenda. The Blueprint for sectoral cooperation on skills will enable the EU and its Member States to harness the growth and investment possibilities stemming from the EU's ambitious climate policies, the Energy Union and the Clean Energy for All Europeans package.



**Miguel Arias Cañete**  
European Commissioner for Climate  
Action and Energy



### Find out more

#### The EU Energy Union Strategy:

[https://ec.europa.eu/commission/priorities/energy-union-and-climate\\_en](https://ec.europa.eu/commission/priorities/energy-union-and-climate_en)

#### The 'Clean Energy for All' European package:

<https://ec.europa.eu/energy/en/news/commission-proposes-new-rules-consumer-centred-clean-energy-transition>

## What can the Blueprint achieve?

The Blueprint provides a platform for cooperation among stakeholders, research institutes, education, qualification and training providers, as well as public authorities at national and regional levels to:

- Set out a sectoral skills strategy to deliver the skills needed to deploy renewable and smart green technologies in the electricity, heating/cooling and transport sectors for the next stage of renewable development (post-2020);
- Identify skills and qualification needs, assess skills shortages (basic, job specific, key and soft competences) and reevaluate occupational profiles;
- Identify occupational profiles, which may benefit from re-skilling or top-up training (e.g. among lower skilled, unemployed or displaced workers);
- Identify skills and occupational requirements that allow continuous innovation in products and services;
- Develop new training curricula/modules and apprenticeship programmes (and delivery methods) for young and adult learners;
- Develop new qualification and training schemes plus training for trainers and quality controllers;
- Identify and establish EU and national funding to help rollout education, training and apprenticeship programmes.

### Links to other related projects and initiatives

Build Up Skills<sup>18</sup> is a strategic European initiative to boost continuing or further education and training for craftsmen, construction workers and systems installers, who are also active in installing renewable energy technologies in buildings. The initiative addresses skills surrounding energy efficiency and renewable energy in buildings, and has identified skills needs across the EU.

The EU Smart Specialisation<sup>19</sup> initiative assists EU countries and regions to develop, implement and review their Research and Innovation Strategies for Smart Specialisation (RIS3) through its Smart Specialisation Platform (S3 Platform). The Smart Specialisation Platform on Energy<sup>20</sup> (S3PEnergy) has set priorities at national and regional levels to create competitive advantage by developing and matching research and innovation (R&I) with business needs, to address emerging opportunities.

Horizon 2020<sup>21</sup>, the EU Research and Innovation programme, will deliver nearly €80 billion in funding over seven years (2014 to 2020). Horizon 2020 is the financial instrument underpinning the implementation of the Europe 2020 flagship initiatives and the EU energy and climate targets. The programme covers energy and many related areas, such as the Digital Agenda for Europe. The "Secure, clean and efficient energy" challenge<sup>22</sup> of Horizon 2020 supports a large number of research, innovation and market uptake projects.

## THE CONSTRUCTION SECTOR



# Why a Blueprint for cooperation on skills in the construction sector?

The European construction sector is a driver of economic growth and employment in every EU Member State.

It accounts for 8.2 % of gross domestic product (GDP) and provides 18 million jobs throughout the EU. More than 90 % of construction companies are small and medium sized enterprises.

The sector plays a central role in the transition to a low-carbon economy, as buildings account for nearly 40 % of energy consumption. Today, some 75 % of Europe's buildings are energy-inefficient, suggesting enormous scope for new jobs in the green economy. Moreover, the construction sector is the least digitised of all sectors except agriculture.

There is huge potential to increase efficiency in the construction and operation of buildings. Furthermore, the construction sector is recognised as a key sector in the 2015 EU Circular Economy Package, because construction and demolition activities are one of the biggest causes of waste. An EU mandatory target encourages stakeholders and Member States to take action, with a goal to recycle 70 % of construction and demolition waste by 2020.

Cedefop's 2016 skills forecast suggests that employment in construction will grow during 2015-2025 and Member States will need to replace an ageing workforce. Around 1 million new workers will be needed by 2025. Skills requirements are likely to change to meet the demand for green buildings. According to an evaluation of the Build Up Skills<sup>23</sup> (BUS) initiative, 3-4 million workers will require training on energy efficiency alone. Plus, a digital transformation will be essential in delivering more efficient buildings and construction processes.

The economic crisis had a profound impact on employment and an exodus of millions of workers from the sector in recent years is dampening recovery. Entrepreneurs report skills shortages and mismatches across the EU. In addition, the sector has an image problem. Improving skills will be essential in supporting blue-collar and white-collar employees to meet new challenges facing construction industries.

The Construction 2020 initiative, launched in 2012, invited Member States and social partners in the construction industry and education institutions "to establish partnerships at national and regional levels [...] to respond to current and emerging needs of the constructions sector [...]". The Blueprint provides a framework to implement this recommendation. Member States are already taking action, especially in the field of vocational education and training. It is also possible to learn from EU-wide initiatives and from stakeholder consultations. The Blueprint can build on these initiatives and spread good practice across the continent. The sector has to foster new technological, managerial and communication skills to remain competitive and sustainable, while facing challenges posed by an ageing workforce, migration and skills mismatches.

The Blueprint aims to improve skills intelligence and address skills shortages. It will help to convert construction into a cohesive and innovative sector, based on the efficient allocation of human resources.

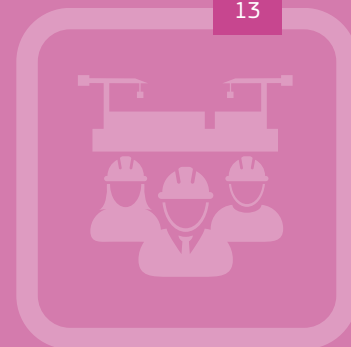


The Commission actively supports the efforts to ensure that European industries can recruit people with the right skills. Millions of jobs in Europe will be affected by new technologies and industrial transformation. We need to prepare our citizens for the 'future of work'. We need a massive upskilling and reorientation of our workforce, bearing in mind that better skills mean higher wages and better jobs. The Blueprint for sectoral cooperation on skills in Europe is a key component of the New Skills Agenda for Europe. I strongly count on its results, from both the 2017 pilot sectors and the six new ones envisaged for 2018!



**Elżbieta Bieńkowska**  
European Commissioner for Internal Market,  
Industry, Entrepreneurship and SMEs

**Note:** Ms Bieńkowska holds responsibility for the Blueprint in the Wave II sectors: construction, paper and steel



### Find out more

#### European Commission initiatives for the construction sector:

[http://ec.europa.eu/growth/sectors/construction\\_en](http://ec.europa.eu/growth/sectors/construction_en)

## What can the Blueprint achieve?

The Blueprint provides a platform for cooperation among stakeholders, research institutes, education, qualification and training providers, as well as public authorities at national and regional levels to:

- Help bring about new partnerships between employers and education providers on skills;
- Help prepare a new generation of digitally aware, multi-skilled workers;
- Provide a platform for sharing good practice (e.g. in the area of training and school-to-work transitions);
- Help to improve the sector's image and attract talent, by highlighting the rewarding professional and vocational careers on offer and by promoting better working conditions;
- Develop Europe-wide solutions to address the sector's challenges across the continent;
- Promote mutually reinforcing benefits surrounding skills development and mobility (taking advantage of the highly mobile nature of the construction workforce).

### Links to other related projects and initiatives

The Construction 2020 Strategy and Action Plan addresses the sector's challenges up to 2020 and sets out strategic priorities<sup>24</sup>. Practitioners and policy-makers are working together to implement the action plan, with a special focus on five areas: innovation and finance; skills and mobility; sustainable resource use; regulatory fitness; and access to international markets.

In 2015, the European Commission launched the European Construction Sector Observatory<sup>25</sup> to provide analysis and comparative assessments of market conditions and policy developments (an analytical report on skills was published in July 2017). In the same year, the Commission also launched its promotion of the European Alliance for Apprenticeships (EAfA) in the construction sector, which has been the only individual sector involved so far. 56 pledges from the sector represent one quarter of all EAfA pledges and the majority of pledges by SMEs<sup>26</sup>.

The 2016 EU Energy Package<sup>27</sup> concerns the construction sector and presents the orientation of EU action for the coming years ('Annex 1: Accelerating clean energy in buildings' addresses energy efficiency and digital skills). The Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME) programme will also support the Blueprint in the construction sector.

## MARITIME SHIPPING

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## Why a Blueprint for cooperation on skills in maritime shipping?

Maritime shipping is a highly globalised industry, covering diverse transportation of goods such as containers, oil and chemicals and a rich variety of secondary services (from towage and dredging to cruise passenger services).

Sea transport handles almost 75 % of the EU's external trade by volume. The industry contributes around €56 billion to EU gross domestic product (GDP) and directly employs some 615 000 people (80 % of them at sea and 20 % on-shore) while indirectly supporting around 2.2 million jobs. Today, the EU controls around 40 % of global tonnage and boasts the world's largest and most innovative fleet.

For every euro of GDP that the European shipping industry generates, an additional 1.6 euro is created elsewhere in the EU economy. Getting goods to clients quickly, whether inside or outside the EU, is critical for economic growth. Moreover, maritime shipping is more environmentally friendly than road and air transportation. It is therefore essential to protect jobs and ensure the sector's competitiveness by closely monitoring and upgrading sectoral skills.

An important challenge lies in ensuring European seafarers can compete for jobs with their counterparts around the world. It is also important to equip those who find employment at sea to eventually progress into on-shore jobs within Member States' maritime clusters. International competition is fierce, as salaries for seafarers from outside of Europe are often considerably lower than in the EU. This makes it essential to continue to invest in the kind of high quality training that gives European seafarers a competitive advantage.

The digitalisation of the economy is likely to affect the sector's skills needs in both the short and medium terms. Technological change is unrelenting, and certain skills acquired just ten years ago are now obsolete. Furthermore, the logistical complexity of handling ever-larger cargo requires personnel with highly specialised technological skills. As a result, training curricula must be revised for newcomers to the industry, while current workers may need to be retrained. There are further challenges in supporting workers to acquire the skills necessary to make the transition from jobs at sea to on-shore jobs. Furthermore, the sector struggles to offer enough apprenticeships and work-based learning opportunities.

Finally, the sector has an image problem. A recent study showed that, overall, young people know little about maritime professions. Additionally, the maritime/port and inland navigation modes of transport are perceived to be the least attractive way to travel<sup>28</sup>. The maritime sector struggles to shake off certain negative connotations (such as an association with slow, dirty vessels, unpredictable weather and working far from home for long periods). Competing with companies across the rest of the economy for IT and technological skills is especially challenging. Operators already claim it is difficult to find recruits with the right skills and many companies are not prepared to face the challenges.

The Blueprint will be instrumental in building sectoral cooperation to address these issues and may also lay the foundation for similar initiatives in other transport sectors – especially road transport.

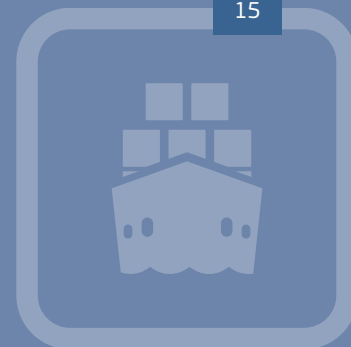
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The European shipping sector must remain a global leader. We have a proud maritime tradition of excellence and innovation, and skilled workers are at the heart of it. In order to stay ahead of the curve, the Commission is presenting a new Blueprint that will help address mismatches between industry needs and education, and facilitate the future development of new skills or competences. This is only a start and I'm also inviting the other transport modes to actively participate in this initiative in the future.

”



**Violeta Bulc**  
European Commissioner  
for Transport



### Find out more

The European Commission maritime transport page:  
[https://ec.europa.eu/transport/modes/maritime/seafarers\\_en](https://ec.europa.eu/transport/modes/maritime/seafarers_en)

## What can the Blueprint achieve?

The Blueprint provides a platform for cooperation among stakeholders, research institutes, education, qualification and training providers, as well as public authorities at national and regional levels to:

- Assess current and upcoming skills shortages and identify occupational profiles to be updated or created to meet the skills shortages (specifying all necessary skills and competences);
- Improve the sector's image, especially among young people and promote maritime careers while increasing sector awareness and information about the variety of jobs and profiles needed in the sector (including on-shore opportunities);
- Support the sector to address skills needs arising from environmental protection standards and technological change;
- Reinforce cooperation between stakeholders by establishing long-term cooperation among industry stakeholders, research institutes and training providers at all levels;
- Help the industry to improve human resources planning and management.

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### Links to other related projects and initiatives

The H2020 Skillful research project<sup>29</sup> will identify professions most likely to disappear and those most likely to be created in the different modes of transport (including maritime shipping) due to technological change and other and other developments (project ends 2019).

The Vasco da Gama project<sup>30</sup>, which ended in 2016, promoted education and training in the maritime transport sector and European mobility. It also supported cooperation between the industry and education and training organisations to improve sectoral skills.

The KnowMe research project<sup>31</sup>, which ended in 2014, addressed the shortage of maritime professionals. The project helped to strengthen human resources professionals' knowledge and to improve the image of maritime shipping.

The Horizon project on fatigue<sup>32</sup>, completed in 2011.

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## THE PAPER-BASED VALUE CHAIN

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## Why a Blueprint for cooperation on skills in the paper-based value chain?

The paper-based value chain forms part of the EU's forest-based industries (consisting of four major industries: woodworking, furniture, pulp & paper, and printing).

With a direct workforce of some 177 000 people, the pulp and paper sub-sector produces 37.2 million tonnes of pulp and 91 million tonnes of paper annually, with an apparent net export rate for paper of around 19 million tonnes, or 21 %. The sector has a turnover of €81 billion and contributes €16.75 billion to EU gross domestic product. Pulp and paper industries are highly capital-intensive, producing a generally low but stable return on investment – resulting from high resource, energy and labour costs. The main raw materials are: raw wood, recovered paper, process chemicals, starch and latex.

In 2014, the paper-based printing sub-sector generated €55.5 billion worth of production value in 120 000 firms, mostly small and medium-sized enterprises, which employed 630 000 workers. 88 % of these firms employ fewer than 10 people. The industry had a net trade surplus of €2.6 billion, equivalent to a net export rate of 4.7 %. The sub-sector's turnover in 2013 approached €80 billion.

The 2013 “Blueprint for the EU's Forest-based Industries” pinpointed skills shortages and mismatches as significant challenges affecting these industries, including the paper-based value chain. The report identified a combination of underlying sociological causes (e.g. the ageing workforce and difficulties in attracting young people to work in manufacturing) and technological ones (e.g. rapidly changing products and processes in the transition to a low-carbon economy and the impact of new media and digitalisation).

Changing products, processes and markets require new skillsets, as well as traditional ones. Moreover, the workforce (workers, technicians, supervisors and management) face continually changing technology and IT systems.

Unfortunately, staff often lack the skills to adapt, due to a mismatch between the content of education programmes and sectoral needs. That is why there is a constant need for the workforce to update its skills; for experienced workers to pass on “soft skills” to younger staff; and for new entrants to access the right training.

The workforce's relatively old and ageing profile also limits the extent to which the current workforce can transfer its knowledge and experience to a new generation. Furthermore, employers struggle to recruit young people into industries, which many consider to be dirty, old-fashioned and polluting. There is a clear need for action to address misperceptions and to transform the sector's image among potential recruits. In particular, by highlighting new careers arising from the sector's technological transformation, the Blueprint may identify ways to attract young talent.

The skills shortages and mismatches of the paper-based value chain, which are common to some other sectors, have a negative impact on competitiveness and growth. Therefore, retaining and expanding knowledge and skills are pre-requisites in ensuring the sector's competitiveness.

**Find out more****European Commission overview of the pulp & paper industry:**

[https://ec.europa.eu/growth/sectors/raw-materials/industries/forest-based/pulp-paper\\_en](https://ec.europa.eu/growth/sectors/raw-materials/industries/forest-based/pulp-paper_en)

**H2020 Skillful research project:**

<http://cordis.europa.eu/project/rcn/205822>

**Vasco da Gama project:**

[www.vasco-da-gama.eu](http://www.vasco-da-gama.eu)



## What can the Blueprint achieve?

The Blueprint provides a platform for cooperation among stakeholders, research institutes, education, qualification and training providers, as well as public authorities at national and regional levels to:

- Identify and assess current mismatches between industry needs and education programmes (with special focus on digital and technological skills);
- Anticipate future skills needs arising from new technologies and digitalisation (the sector's needs should be reflected in education and training frameworks, methods and content);
- Address the recruitment gap by raising awareness of career opportunities and promoting attractive careers in the sector;
- Develop new technological skills and competences needed to support innovative new products, processes and technologies, which facilitate the transition to a resource-efficient, low-carbon economy;
- Identify and exchange best practices among industry stakeholders across Europe, including research institutes, education and training providers.

### Links to other related projects and initiatives

During 2015-16, the main European pulp and paper industry federation, CEPI, and its social partner, IndustriAll, assessed sector skills mismatches and gaps in eight EU Member States, by reviewing education and training systems' relevance to employers' needs<sup>33</sup>. This was complemented by research into employers' training offers and their skills and recruitment needs.

A similar analysis is also available to the printing sector, entitled "Future Skills of the Graphical Industry: identifying and promoting best practices in Europe"<sup>34</sup>. This research, by Integraf (the main European-level industrial federation) and their social partner Uni Europa Graphical, was undertaken as part of the 2013-15 Social Dialogue for the Printing Sector, with support from the European Commission and EGIN (the European platform for education, training and labour-market projects for creative industries).

## THE STEEL SECTOR

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# Why a Blueprint for cooperation on skills in the steel sector?

**Steel is central to modern economies and is synonymous with growth and progress.**

Europe's reconciliation after World War II was built on unified coal and steel industries. A robust industrial base is therefore essential for Europe's economic growth, for preserving sustainable jobs and for the EU's competitiveness in global markets. The steel sector represents about 1.3 % of the EU's gross domestic product (GDP) and directly provides more than 300 000 jobs, with an even greater number of dependent jobs. The EU is the second largest producer of steel in the world after China, accounting for approximately 10 % of global output. Steel also forms part of a number of industrial value chains and is closely linked to other industrial sectors such as automotive, construction, electronics, mechanical and electrical engineering. Steel has a significant cross-border dimension too. With 500 production sites split between 23 Member States, it is a truly European industry.

Unfortunately, Europe's competitive position in the steel market has deteriorated in the last few years. Since 2014, the global economic slowdown has negatively impacted demand. Global over capacity is another phenomenon, which weakens the sector's competitiveness.

In its Communication "Steel: Preserving sustainable jobs and growth in Europe" of March 2016<sup>35</sup>, the European Commission addressed these challenges and called for a comprehensive, accelerated response by industry, Member States and EU

institutions. The Communication underlined that Europe cannot compete on the basis of low wages or deteriorating working conditions and social standards. Rather, it needs to compete on innovation, technology and quality, which can only be delivered by highly skilled people. That is why a highly trained workforce is essential to building, running and maintaining a modern and competitive steel industry.

The sector faces several challenges. First, it runs the risk of losing the expertise of experienced staff due to knowledge-transfer problems and difficulties in recruiting skilled workers (partly as a result of the sector's image problem). Secondly, the steel industry's rapidly evolving knowledge and skills needs pose a major challenge. Furthermore, there is only a fragmented understanding of the necessary resources adjustments in the sector, which may stand in the way of change.

**Find out more****European Commission initiatives on the steel sector:**

[https://ec.europa.eu/growth/sectors/raw-materials/industries/metals/steel\\_en](https://ec.europa.eu/growth/sectors/raw-materials/industries/metals/steel_en)

## What can the Blueprint achieve?

The Blueprint provides a platform for cooperation among stakeholders, research institutes, education, qualification and training providers, as well as public authorities at national and regional levels to:

- Assess the current situation of the workforce and address critical aspects relating to, for example, knowledge transfer, skills shortages/mismatches, the sector's image and related recruitment difficulties;
- Assess the current situation of the different national VET systems, deliver new curricula at national and regional level to address future skills mismatches in the steel sector;
- Improve the image of the steel sector;
- Establish long-term cooperation beyond the life of the project.

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### Links to other related projects and initiatives

The European Steel Technology Platform (ESTEP)<sup>36</sup> has focused its agenda around education and training to ensure skills needs are met and to secure the industry's long-term competitiveness. Since 2006, through the Sectorial Social Dialogue Committee, social partners (IndustriAll and EUROFER) have developed a common understanding of challenges facing companies and workers in the sector.

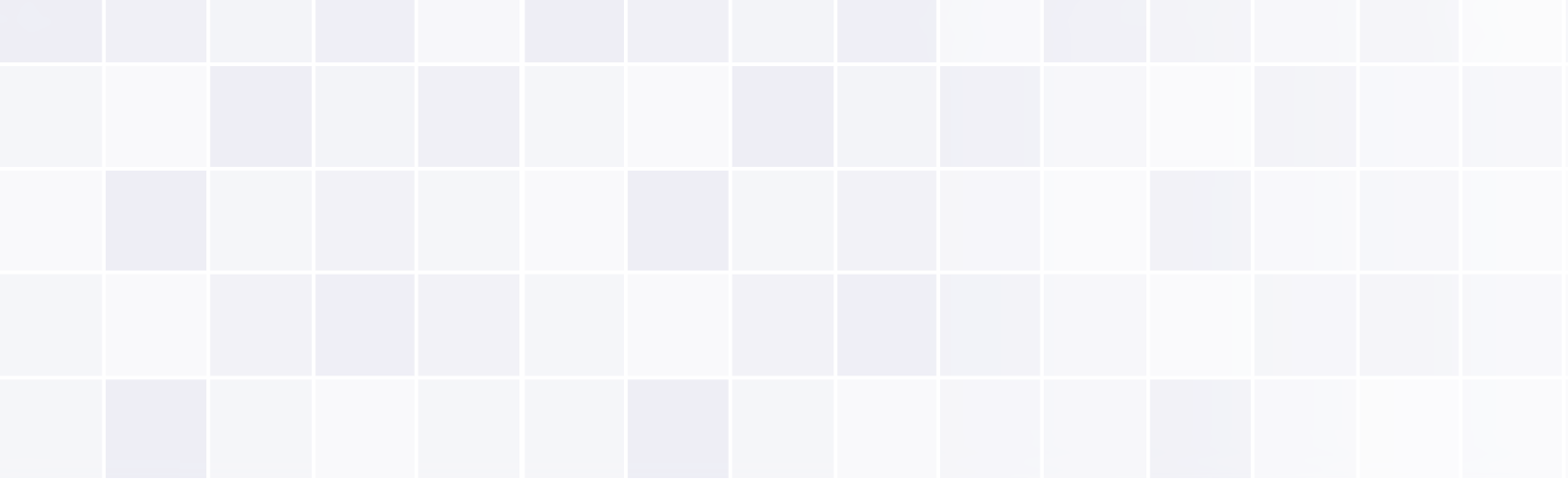
The Greening Technical Vocational Education and Training (GT VET) project, supported in the framework of the Lifelong Learning Programme, has explored how vocational education and training (VET) pathways meet environmental and health & safety skills needs, which are drivers of global competitiveness and sustainability.

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# Endnotes

- 1 New Skills Agenda for Europe:  
<http://ec.europa.eu/social/main.jsp?catId=1223>
- 2 European Skills, Competences, Occupations, and Qualifications (ESCO):  
<https://ec.europa.eu/esco/portal/home>
- 3 Examples of EU employability and mobility tools: Erasmus+, EURES, Drop'Pin, European Alliance for Apprenticeships
- 4 Examples of EU skills and qualifications tools: European Qualifications Framework, ESCO, Europass, ECVET and EQAVET
- 5 Erasmus+Sector Skills Alliances:  
[https://eacea.ec.europa.eu/erasmus-plus/actions/key-action-2-cooperation-for-innovation-and-exchange-good-practices/sector-skills-alliances\\_en](https://eacea.ec.europa.eu/erasmus-plus/actions/key-action-2-cooperation-for-innovation-and-exchange-good-practices/sector-skills-alliances_en)
- 6 Smart Specialisation Map:  
<http://s3platform.jrc.ec.europa.eu/map>
- 7 EU Structural and Investment Funds (ESIF):  
[http://ec.europa.eu/contracts\\_grants/funds\\_en.htm](http://ec.europa.eu/contracts_grants/funds_en.htm)
- 8 3D opportunity for the talent gap additive manufacturing and the workforce of the future (2016):  
<https://www2.deloitte.com/insights/us/en/focus/3d-opportunity/3d-printing-talent-gap-workforce-development.html>
- 9 European Commission report summaries on additive manufacturing:  
<http://europa.eu/!CK83fG>
- 10 AM-Motion project:  
<http://www.am-motion.eu/about-the-project2.html>
- 11 3D Prism project:  
<http://3dprism.eu/>
- 12 Metals Alliance project:  
<http://www.metalsalliance.eu/objectives/>
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[http://ec.europa.eu/programmes/erasmus-plus/projects/#search/keyword=additive%20manufacturing&options\[0\]=ongoing&matchAllCountries=false](http://ec.europa.eu/programmes/erasmus-plus/projects/#search/keyword=additive%20manufacturing&options[0]=ongoing&matchAllCountries=false)  
On-going projects on 3D printing:  
[http://ec.europa.eu/programmes/erasmus-plus/projects/#search/keyword=3d%20printing&options\[0\]=ongoing&matchAllCountries=false](http://ec.europa.eu/programmes/erasmus-plus/projects/#search/keyword=3d%20printing&options[0]=ongoing&matchAllCountries=false)  
Completed projects:  
[http://ec.europa.eu/programmes/erasmus-plus/projects/#search/keyword=additive%20manufacturing&options\[0\]=finalized&matchAllCountries=false](http://ec.europa.eu/programmes/erasmus-plus/projects/#search/keyword=additive%20manufacturing&options[0]=finalized&matchAllCountries=false)
- 14 The Digital Skills and Jobs Coalition:  
<https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition>
- 15 EIT Innovation Communities:  
<https://eit.europa.eu/activities/innovation-communities>
- 16 COSME Data Hub:  
<https://ec.europa.eu/easme/en/cosme-data-hub>
- 17 An EU strategy for heating and cooling:  
[https://ec.europa.eu/energy/sites/ener/files/documents/1\\_EN\\_ACT\\_part1\\_v14.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/1_EN_ACT_part1_v14.pdf)
- 18 Build Up Skills initiative:  
<http://www.buildup.eu/en/skills>

- 19 EU Smart Specialisation Initiative:  
<https://ec.europa.eu/jrc/en/research-topic/smart-specialisation>
- 20 Smart Specialisation Platform on Energy:  
<http://s3platform.jrc.ec.europa.eu/s3p-energy>
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[https://ec.europa.eu/growth/sectors/construction/observatory\\_en](https://ec.europa.eu/growth/sectors/construction/observatory_en)
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[https://ec.europa.eu/growth/sectors/construction/apprenticeships\\_en](https://ec.europa.eu/growth/sectors/construction/apprenticeships_en)
- 27 The 2016 EU Energy Package (Annex 1: Accelerating Clean Energy in Buildings):  
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- 28 European Commission Study: Making the EU Transport Sector Attractive to Future Generations (2017):  
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- 29 H2020 Skillful research project:  
<http://cordis.europa.eu/project/rcn/205822>
- 30 Vasco da Gama project:  
[www.vasco-da-gama.eu](http://www.vasco-da-gama.eu)
- 31 KnowMe project:  
[https://cordis.europa.eu/project/rcn/198033\\_en.html](https://cordis.europa.eu/project/rcn/198033_en.html)
- 32 Horizon 2020 project on fatigue:  
[www.warsashacademy.co.uk/about/our-expertise/maritime-research-centre/horizon-project/horizon-project.aspx](http://www.warsashacademy.co.uk/about/our-expertise/maritime-research-centre/horizon-project/horizon-project.aspx)
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<http://www.cepi.org/system/files/public/documents/publications/socialaffairs/2016/160040-CEPI-brochure-EN-04.pdf>
- 34 Future Skills of the Graphical Industry: identifying and promoting best practices in Europe:  
<https://www.intergraf.eu/images/FutureSkillsReportENG.pdf>
- 35 European Commission Communication 'Steel: Preserving sustainable jobs and growth in Europe', COM(2016)155:  
<http://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/1-2016-155-EN-F1-1.PDF>
- 36 European Steel Technology Platform (ESTEP):  
<https://www.estep.eu>





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The Blueprint for Sectoral Cooperation on Skills is a framework for strategic cooperation to address short and medium-term skills needs in a given economic sector. This is the second wave of the Blueprint, which focuses on six sectors: additive manufacturing, green technology and renewable energy, construction, maritime shipping, the paper-based value chain, and steel.

This publication shows how stakeholders (businesses, trade unions, public authorities, research, education and training institutions etc.) can apply the framework to address challenges, illustrating the steps towards delivering sector-specific skills solutions through sectoral partnerships.

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