FEMCON

Empowering Women in Construction

MODULE 4

Future of Construction

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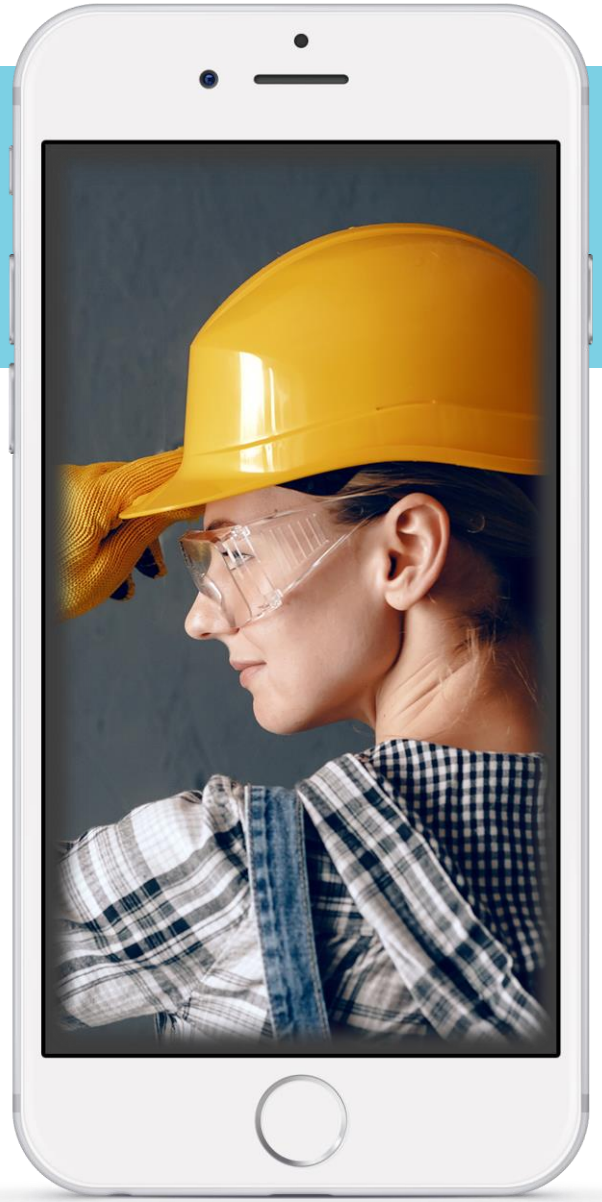
90% of CEOs believe the digital economy will impact their industry, but less then 15% are executing on a digital strategy.

MIT SLOAN NAD CAPGEMINI

Learning activity: *“In the news”*

Before to start the lessons of the FUTURE OF CONSTRUCTION module, please click on the image to watch an introductory.

Please CTRL + Click on the image to follow the URL of the video.



The future of Construction

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The future of construction

A competitive, green and digital Europe

Construction has a huge impact on people's lives, their jobs and their quality of life.

- ❑ The construction sector is responsible for over 35% of the EU’s total waste generation.
- ❑ Construction products, manufacturing, material extraction and renovation of building are 5% - 12% of total national GHG emissions.
- ❑ The use of efficiency materials could save 80% of GHG emissions.

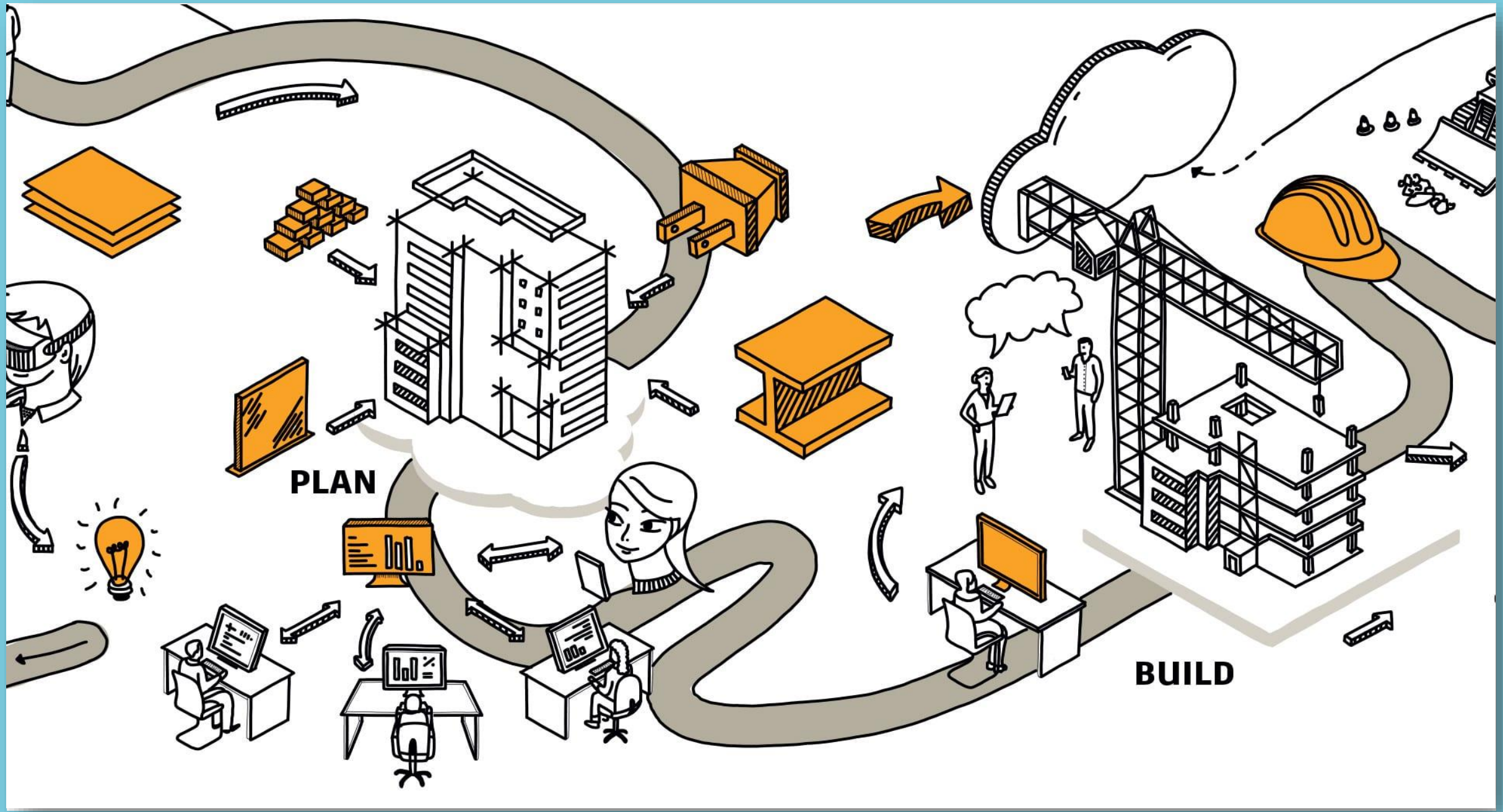

Image source: Digital Builder - AUTODESK

The future of Europe

The European Green Deal

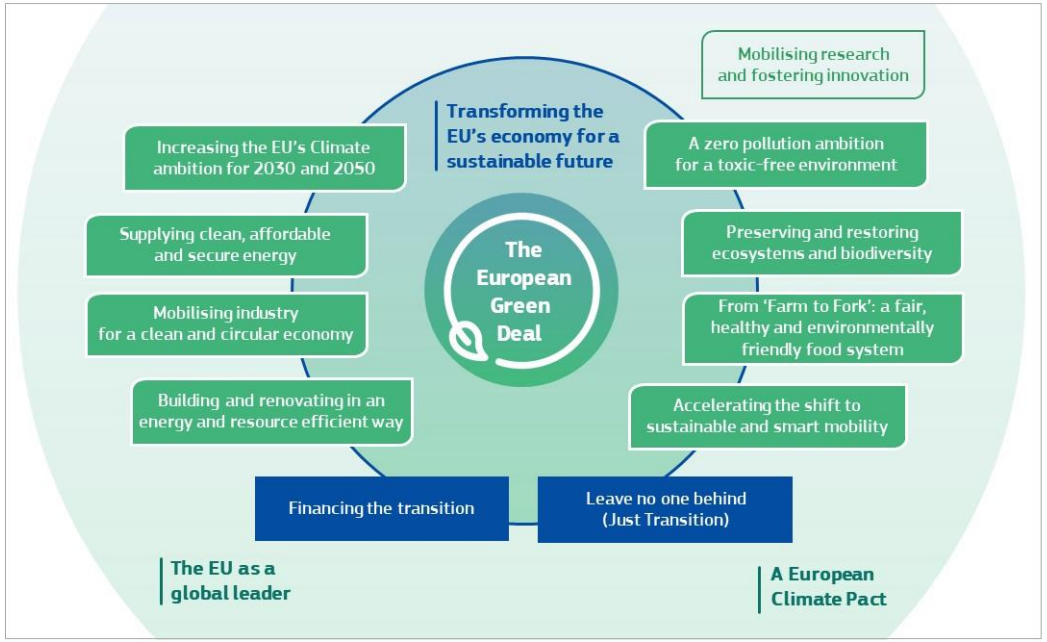

Image source: EUR-Lex

The future of Europe and the world at large is threatened by climate change and environmental degradation.

To overcome these challenges, the European Commission adopted in December 2019 the "European Green Deal" to increase the well-being and improve the health of today's citizens and future generations.

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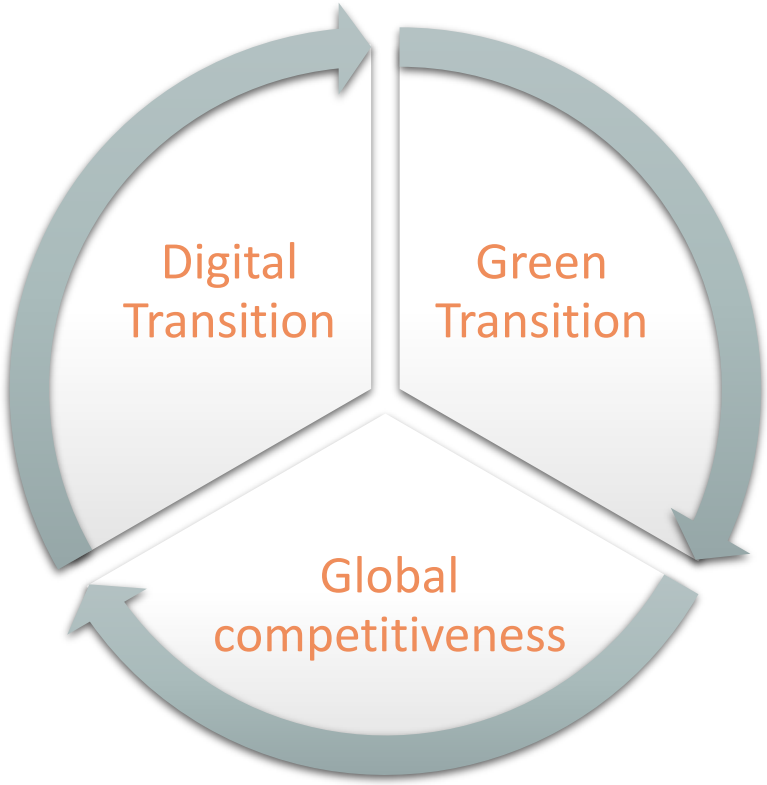
The future of Europe – *A green Deal Industrial Plan*

In January 2023, the European Commission presented a Green Deal Plan to become the European industry greener, more circular and more digital.

The future of construction stops with these three drivers that will transform the construction industry.



https://ec.europa.eu/commission/presscorner/detail/en/ip_23_510

The Green Deal Industrial Plan

The Green Pact Industrial Plan aims to improve the competitiveness of European industry through zero emissions and to drive the transition to zero emissions. This plan focuses on 4 pillars:

1. **Regulatory framework:** simplified to improve European industrial capacity and provide a common regulatory framework that can be effectively implemented, promoting strategic projects and to improve the technologies of the European single market.

2. **Access to finance:** accelerating investment and funding for clean technology production.

3. **Skills upgrading:** to implement a green transition without affecting jobs (the EU estimates that it can affect 35-40%).

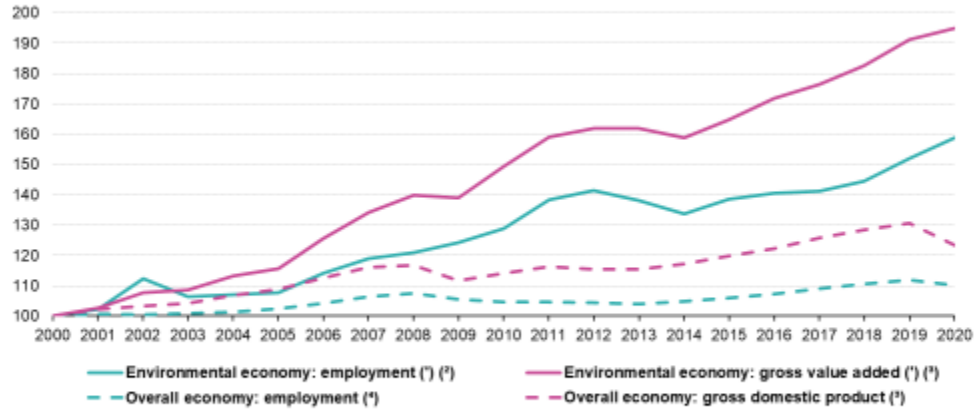
4. **Open trade for resilient supply chains:** cooperative work to foster clean technology industry partnerships.

Green Deal Industrial Plan – *Green & Digital Skills*

The third pillar of the Green Deal Industrial Plan focus on green and digital skills because the green transition must be people-centred.

According to Eurostat estimates, employment in the EU environmental economy increased from 3.2 million in 2000 to 5.1 million in 2020.

Development of key indicators for the environmental economy and the overall economy, EU, 2000–2020
(2000 = 100)



(') Eurostat estimates
(²) In full-time equivalents
(³) Index compiled for chain-linked volumes data in € million (reference year 2010; at 2010 exchange rates)
(⁴) Thousand persons
Source: Eurostat (online data codes: nama_10_a10_e, nama_10_gdp, env_ac_egss1, env_ac_egss2)

eurostat

Source: Eurostat (env_ac_egss1), (env_ac_egss2), (nama_10_gdp) and (nama_10_a10_e)

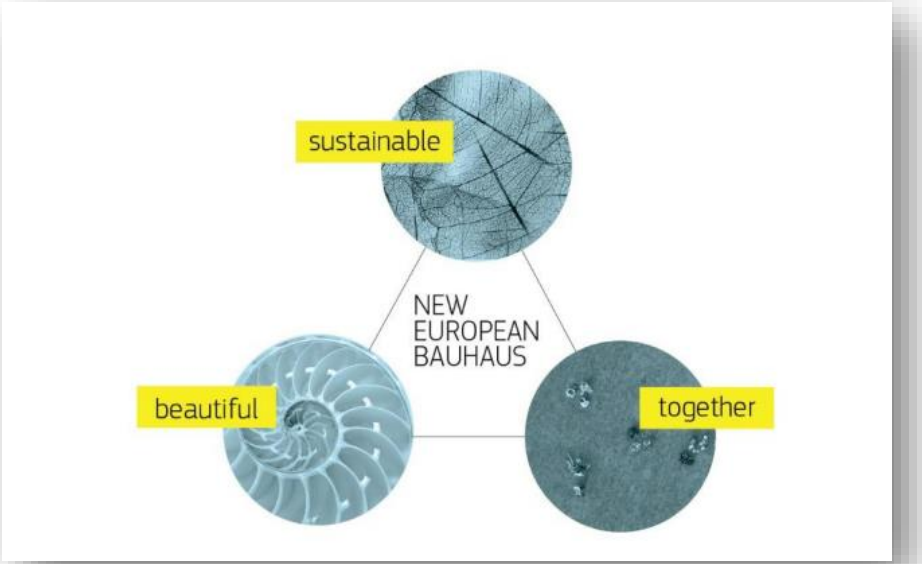
“We have a once in a generation opportunity to show the way with speed, ambition and a sense of purpose to secure the EU’s industrial lead in the fast-growing net-zero technology sector. Europe is determined to lead the clean tech revolution. For our companies and people, it means turning skills into quality jobs and innovation into mass production, thanks to a simpler and faster framework. Better access to finance will allow our key clean tech industries to scale up quickly.”

President Ursula von der Leyen - 01/02/2023

The New European Bahaus – *from 1919 to 2021*

The **New European Bahaus** is a European initiative that connects the objectives of the Green Deal to promote a more sustainable lifestyle in various sectors such as construction.

It focuses on bringing a **more creative perspective** to the **European Green Deal** by bringing it closer to people's lives. The pillars of NEB are:



The New European Bahaus – *Values*

Sustainability

From climate goals, to circularity, zero pollution, and biodiversity.

Aesthetics

Quality of experience and style, beyond functionality.

Inclusion

Valorising diversity, equality for all, accessibility and affordability

“If the European Green Deal has a soul, then it is the New European Bauhaus wich has led to an explosión of creativity across our Union”

Ursula Von der Leyen, President of the European Commission

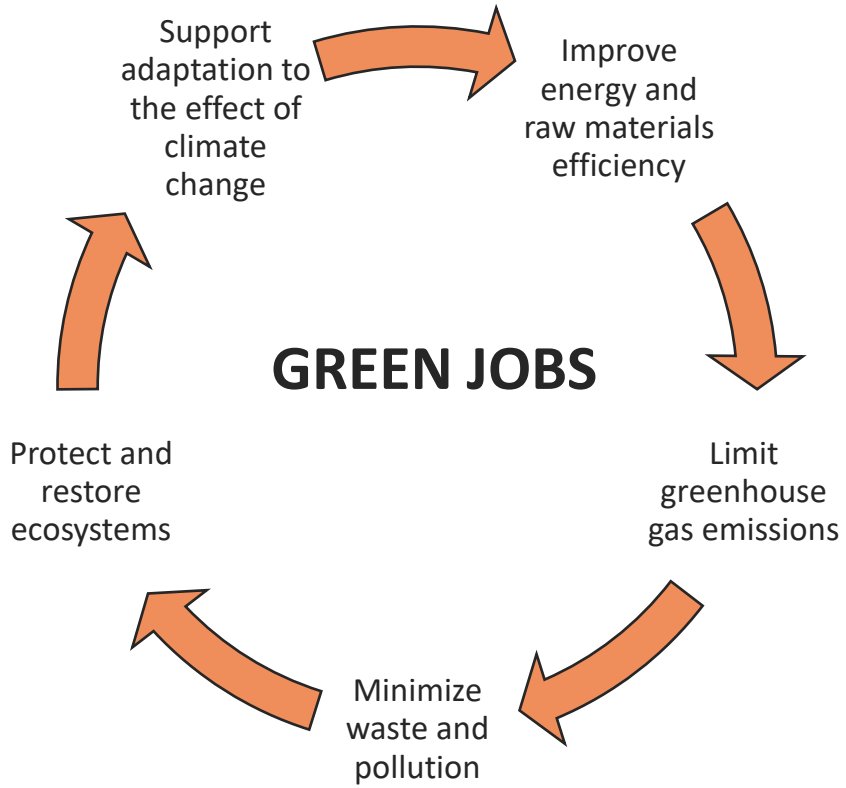
02

Green Skills

Green Skills

The knowledge, abilities, values and attitudes needed to live in, develop and support a society which reduces the impact of human activity on the environment. *(Cedefop, 2012)*

Decent jobs that contribute to preserve or restore the environment, be they in traditional sector such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency (The International Labour Office, 2016). Help to:



Source: self-developed

Green skills: *the classifier*

The European Skills, Competences, Qualifications and Occupations (ESCO) has developed a classification for activities, works or skills within the framework of sustainability.

Brown

Knowledge and skills that increase the impact of human activity on the environment

White

Don’t increase nor reduce the impact of human activity on the environment

Green

Reduce the impact of human activity on the environment

The European Skills, Competences, Qualifications and Occupations (ESCO), January 2022

Green skills – *Strategic frameworks for sustainable economic and development*

1. Regulatory Framework on Sustainable Development and Environmental Integration in the EU

In Europe we find different Treaties, programmes and strategies that develop this normative framework on which to develop employment measures. EU Treaties, Sixth EU Sustainable Development Programme, Development Strategies, Thematic Strategies (biodiversity, health, environment...), Framework Directives (EMAS, Eco-label, REACH).

2. National sustainable development and environmental integration regulatory frameworks

To be developed by each of the Member States, in the case of Spain there are Strategies such as the Climate Change and Clean Energy Strategy or the laws on Sustainable Development of the Rural Environment, Natural Heritage, Right to environmental information...

These types of regulatory frameworks generate principles that inspire law, as well as determine general objectives on which to subsequently base employment promotion measures.

03

Digital Skills

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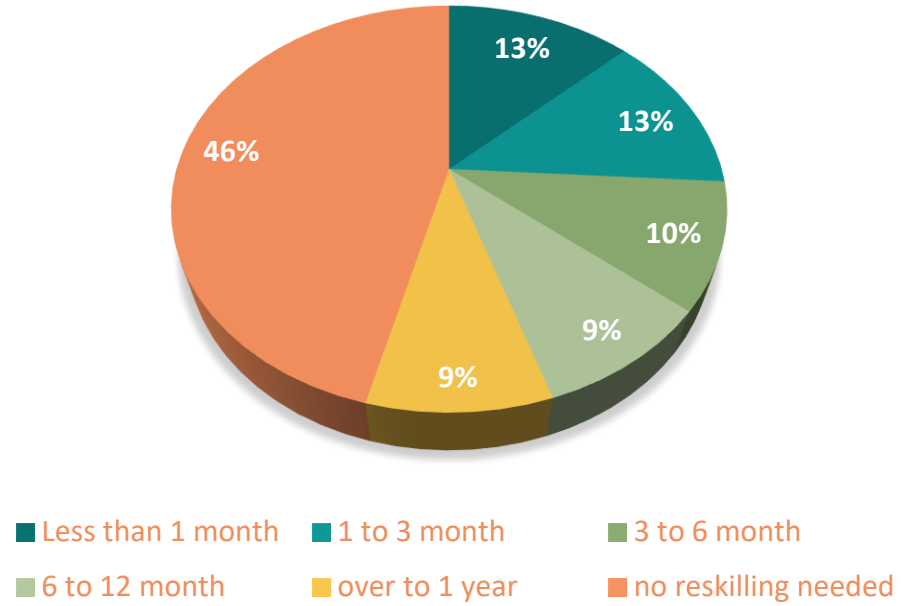
Digital skills

ILO defined the digital skills like: *"Those that enable people to use technology for a variety of purpose such as working, learning, shopping, information, entertainment and participation in society" (ILO, 2019)*

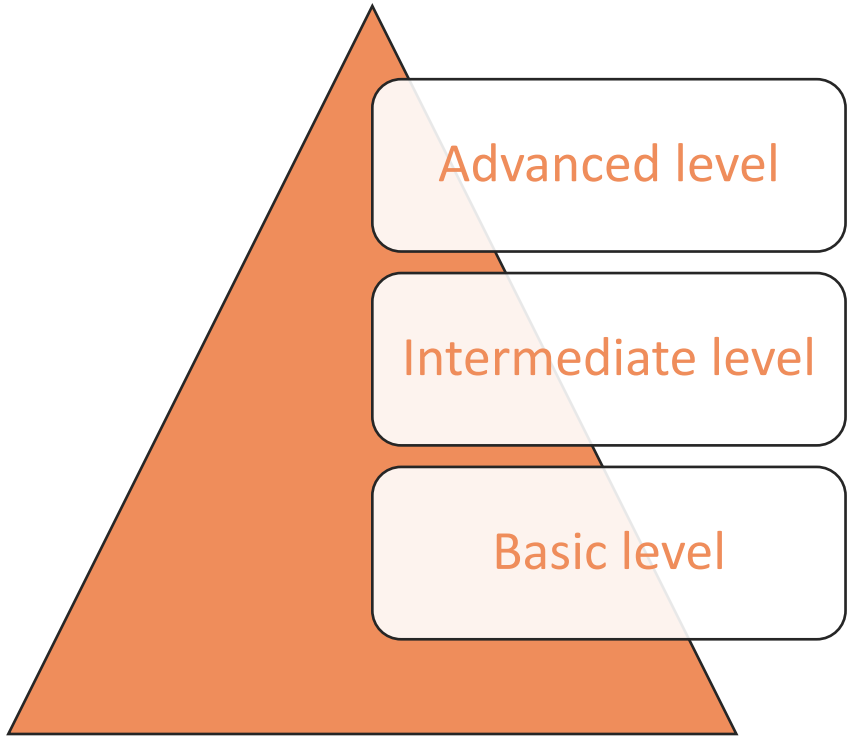
Unesco defined digital skills as *"A range of abilities to use digital devices, communication applications, and networks to Access and manage information*" (UNESCO, April 2023)

European workers reskilling



Source: World Economic Forum, 2018

Digital Skills – *Classification by (International Telecommunications Union)*



Source: self-developed based on the information provided by ILO: https://www.oitcinterfor.org/en/digitalizacion/digital-skills

Advanced level: These are the competences related to the IT sector or environment such as design, computer development... This type of competences are related to higher education and training.

Intermediate level: are the competences related to using digital skills more effectively. At this level the competences are constantly developing so that new competences are added.

Basic level: It includes competences for the performance of basic tasks (related to the use of telephones, computers, sending emails, etc.).

https://www.oitcinterfor.org/en/digitalizacion/digital-skills#:~:text=Digital%20skills%20are%20those%20that,entertainment%20and%20participation%20in%20society.

Digital Skills – *The Digital Decade*

The European Commission has developed a strategy to increase the number of people qualified in digital skills such as communication technology (ICT) and to train more than 20 million ICT professionals in Europe by 2030.

This strategy also includes measures to increase the number of digital experts including different genders and diversity gaps in the IT sector. In addition, there will be a focus on cybersecurity skills in the EU Workforce, as well as supporting measures on digital skills set out in the European Pillar of Social Rights Actions.

Within this decade, the European Commission has developed a map on its website where you can see updated data on people with digital skills by country, as well as the percentage of employees with these skills in companies.

SPAIN

64,2% — Basic Digital Skills

4,1% — Digital Experts Employees

24% — Companies that reported problems to hire digital experts

***Source**: self-developed based on the information provided in the European Interactive Map designed by the Digital Skills & Jobs Platform*

IRELAND

70,5% Basic Digital Skills

6,3% Digital Experts Employees

53% Companies that reported problems to hire digital experts

***Source**: self-developed based on the information provided in the European Interactive Map designed by the Digital Skills & Jobs Platform*

DENMARK

68,6% — Basic Digital Skills

5,6% — Digital Experts Employees

58% — Companies that reported problems to hire digital experts

***Source**: self-developed based on the information provided in the European Interactive Map designed by the Digital Skills & Jobs Platform*

GERMANY

48,9% — Basic Digital Skills

4,9% — Digital Experts Employees

66% — Companies that reported problems to hire digital experts

***Source**: self-developed based on the information provided in the European Interactive Map designed by the Digital Skills & Jobs Platform*

04

New Market Opportunities

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New market opportunities:
Future market trends

Source: Deloitte analysis, 2021

Future job opportunities and the construction sector will be influenced by market trends such as:

- Smart Operations
- Prefabrications and modular construction
- Data and advanced analytics / Digitalisation
- Future of work
- Strategic sourcing

New market opportunities: *Future of the Construction Jobs*

The Construction sector has been affected and influenced by crises such as COVID-19 or by labour shortages both, qualitative and quantitative. Also, the increase in the prices of materials, as well as their scarcity, has encouraged the development of new trends and job opportunities within the sector.

1. Pre-fabrication & modular construction
2. Digitalisation
3. Sustainability – *green construction employment*

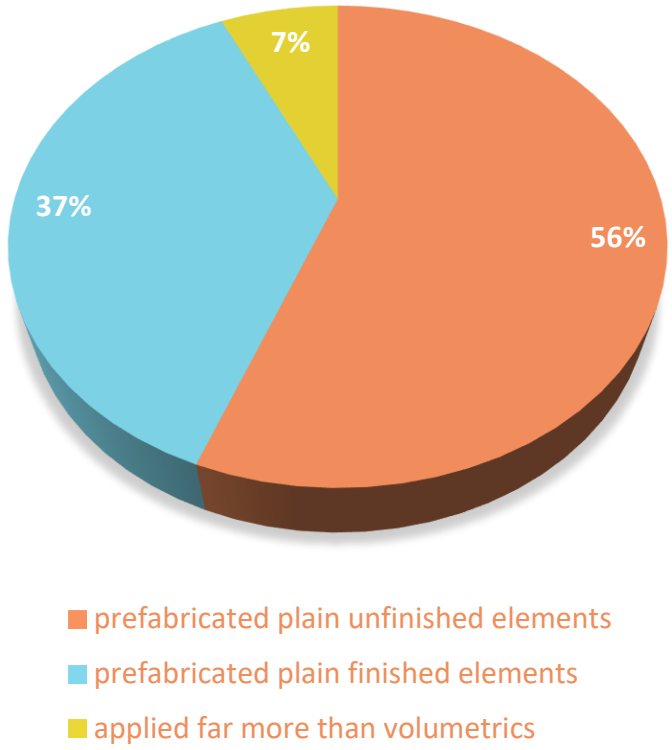
Pre-fabrication & modular construction

One of the consequences of the labour shortage will be the search for new solutions such as prefabrication, which has been used previously in Europe. Some of the solutions are:

- ❑ Panelized systems / panelized systems with finishing
- ❑ 3D pre-fabrication.

These are a series of solutions that in some European countries such as the **Netherlands** have a lot of weight, where **60%** of architects use some type of these **solutions** when developing their **projects**. In countries such as **Germany**, **Poland** or **Italy**, around **50%** of the projects are used.

Prefabrication at European level



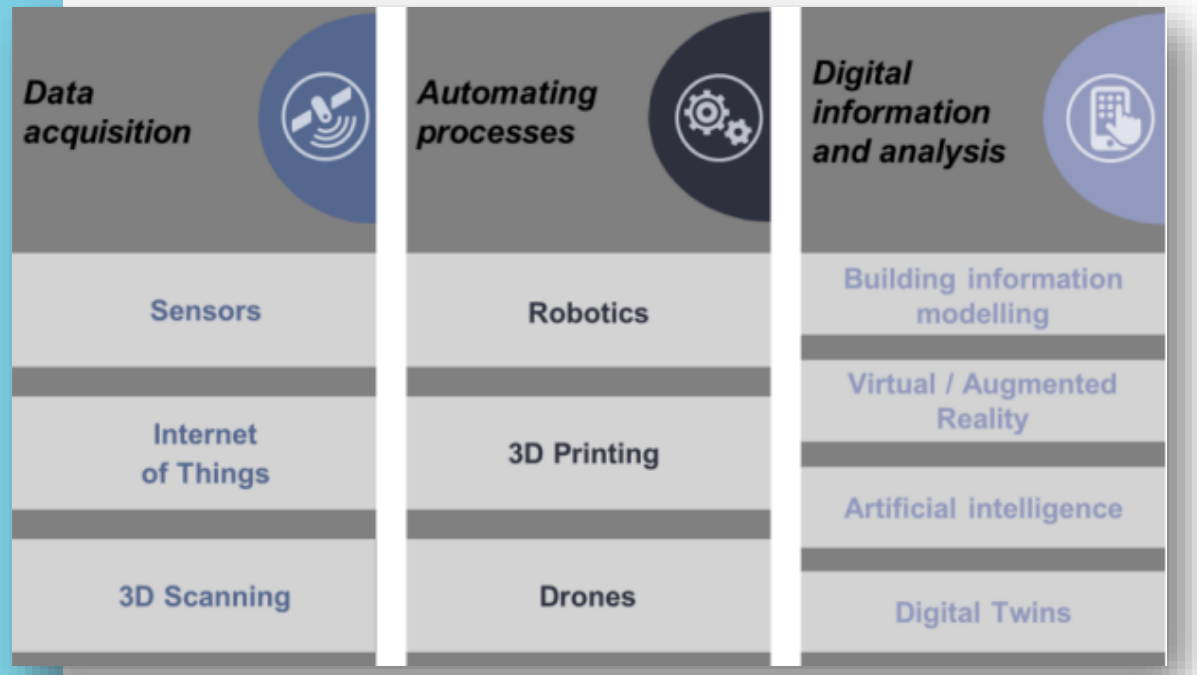
Source: USP Marketing Consulting, 2023

Digitalisation

The digitalisation in the construction industry involves multiple processes like automation or digital Project communication, and digital tools.

"Digitalisation in the construction sector can bring significant opportunities for the whole value chain" (ECSO, 2021)

Three categories of digital technologies in construction



Source: European Construction Sector Observatory, 2021

Digitalisation: *Categories*

Data acquisition

Here we can include everything related to data from **sensors**, connected devices or **3D scanning**, some examples being geo-location. This data will allow to improve productivity within the sector.

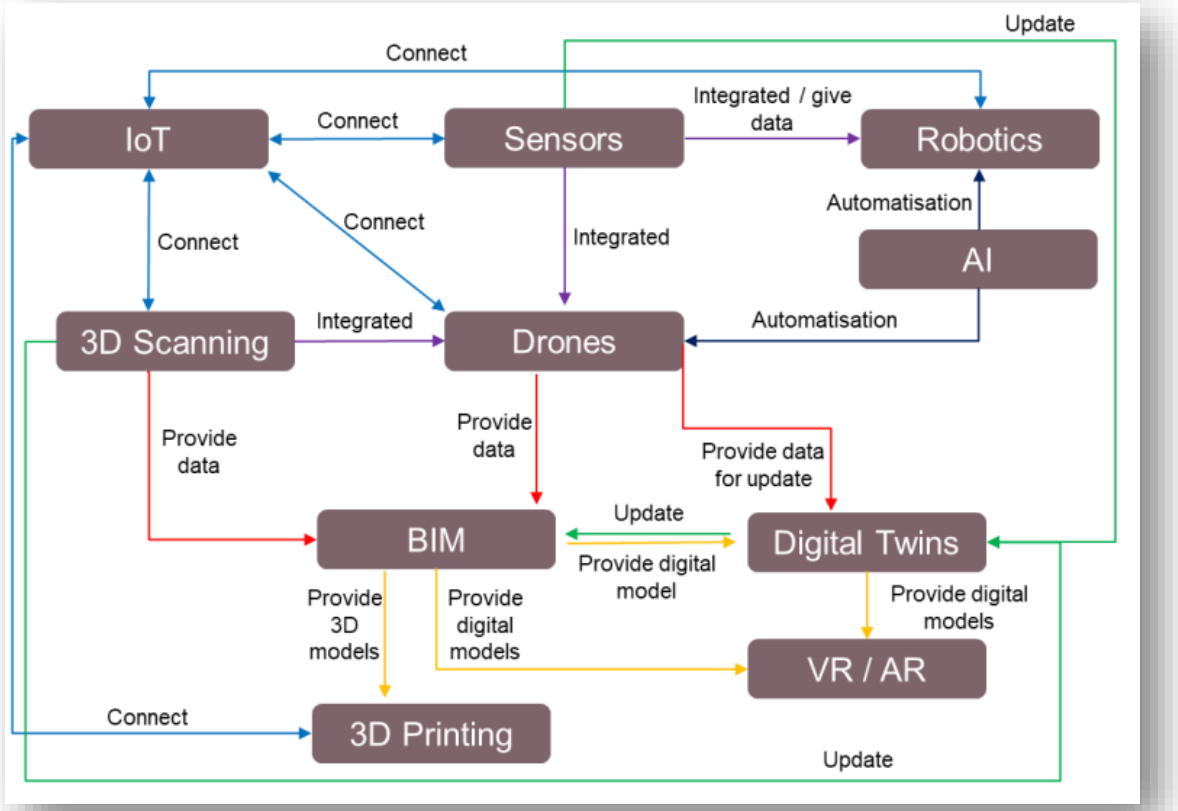
Automating processes

The automation of some processes and activities will improve the quality of projects and reduce certain risks for workers through **robots**, **3D printing** or the use of **drones**.

Digital information and analysis

The possibility of connecting these processes and offering real-time information or historical information through data-bases will improve competitiveness and results. We highlight **virtual reality** or **BIM**

Interactions among digital technologies in the construction sector



Source: Digitalisation in the construction sector, ECSO, 2021

Sustainability - *Green construction employment*

The latest data from the European Commission reflect the high environmental impact of the construction sector, with the responsible for the 35% of the EU's total waste generation and 5-12% of total national GHG emissions.[1]

It is through policies such as the Green Deal, the European Industrial Strategy, or the Construction Products Regulation (CPR) that new career opportunities will exist to make the construction sector greener. Some possibilities when we talk about green construction employment are:

Acoustical engineers	Chief sustainability officer	Energy auditor	Green marketer
Facilities manager	Landscape architect	Sustainability specialist	Electrical engineer

1. European Commission (2021): "*Buildings and construction*". Consulted in: https://single-market-economy.ec.europa.eu/industry/sustainability/buildings-and-construction_en

05

Learning Activity for a small group

(less then 10 learners)

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Future needs & Challenges

Think over….

1. Regulatory skills
2. Green & Envinronmental skills
3. Technological skills

…that will influence the future of the construction sector

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Learning objectives

At the end of this exercise, the learner will be able to recognize future trends and skills that will directly influence the future construction sector.

They will also be able to relate these skills and trends to the work and influence of women in the construction sector.

Learning activity

Spliting into 3 groups

The construction will be characterized by future skills demands and trends such as:

- Regulatory skills
  New buildings as well as renovations in construction must comply with a series of policies and regulations, generating a demand for training in this respect.

- Green and environmental skills given that buildings account for 35% of all greenhouse emissions and buildings account for the largest share of the EU's total final energy consumption (40%); training on green solutions is essential.

- Technological skills
  Systems like BIM, Virtual Reality, 3D printing, and modular construction will help to make the operation of construction companies more efficient and improve their quality.

5.1

Learning activity: JIGSAW – *Regulatory Skills*

Groups receive information about regulatory, political and economic policies that will influence the future of the construction sector.

Leading questions to be adressed:

- What intervening plans, policies or guidelines will influence construction?
- Can regulatory measures improve the inclusion of women in the construction sector?

5.2

Learning activity: JIGSAW – *Green & Environmental skills*

Groups receive information about green and environmental skills that will influence the future of the construction sector.

Leading questions to be adressed:

- What kind of green skills will influence the construction sector the most?
- Can green jobs influence in a positive way, the introduction of women in the construction sector?
- What kind of green jobs are related to green skills that will have a growth in the sector?

5.3

Learning activity: JIGSAW – *Technological skills*

Groups receive information about technological skills and digitalisation that will influence the future of the construction sector.

Leading questions to be adressed:

- What kind of digital skills will grow the most in the construction sector?
- Can Digitalisation help women in their inclusion in the construction sector?
- What types of Digitalisation jobs/tools are being used the most in construction?

06

Learning activity for a large group

(more then 10 learners)

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Learning activity

Arrange four to five chair in an inner circle (the fishbowl). The remaining chairs are arranged in concentric circles outside the fishbowl.

The construction will be characterized by future skills demands and trends such as:

- ❑ Regulatory skills
  New buildings as well as renovations in construction must comply with a series of policies and regulations, generating a demand for training in this respect.
- ❑ Green and environmental skills given that buildings account for 35% of all greenhouse emissions and buildings account for the largest share of the EU's total final energy consumption (40%); training on green solutions is essential
- ❑ Technological skills
  Systems like BIM, Virtual Reality, 3D printing, and modular construction will help to make the operation of construction companies more efficient and improve their quality.

6.1

Learning activity: FISHBOWL –

Regulatory Skills

First fishbowl receive information about Digitalisation and new technologies that will influence the future of the construction sector.

Leading questions to be adressed:

- What intervening plans, policies or guidelines will influence construction?
- Can regulatory measures improve the inclusion of women in the construction sector?

6.2

Learning activity: FISHBOWL – *Green and Environmental skills*

Second fishbowl receive information about Green and environmental skills that will influence the future of the construction sector.

Leading questions to be adressed:

- What kind of green skills will influence the construction sector the most?
- Can green skills influence the introduction of women in the construction sector?
- What kind of green jobs are related to green skills that will have a growth in the sector?

6.3

Learning activity: FISHBOWL –

Technological skills

Third fishbowl receive information about Digitalisation and new technologies that will influence the future of the construction sector.

Leading questions to be adressed:

- What kind of digital skills will grow the most in the construction sector?
- Can digitalisation help women in their inclusion in the construction sector?
- What types of digitalisation jobs/tools are being used the most in construction?

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Thank you

Any questions?

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