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KNOWLEDGE FOR ACTION

THE CASE OF EII IN FRANCE

DECARBONIZING ENERGY INTENSIVE INDUSTRIES: WHAT ARE THE RISK FOR JOBS?

ETUI-ECF PROJECT

2 JUNE 2022

BRUSSELS

1#

ENERGY-INTENSIVE INDUSTRIES, NATIONAL STRATEGY AND DECARBONISATION PATHWAYS

A CONSIDERABLE REDUCTION IN EMISSIONS THAT CANNOT BE ATTRIBUTED EXCLUSIVELY TO DECARBONISATION MEASURES AND POLICIES

Table 2. Evolution of GHG emissions in France and EU27 by sector					
(tCO2eq)	**1990**	**2005**	**2019**	**% var. 1990-2019**	**% var. 2005-2019**
STEEL FRANCE	11.950.337	9.203.846	5.159.347	-56,8%	-43,9%
STEEL EU27				*-49,5%*	*-26,6%*
NON-FERROUS METALS FRANCE	2.002.471	1.182.110	838.385	-58,1%	-29,1%
NON-FERROUS EU27				*-22,1%*	*-20,6%*
CHEMICAL FRANCE	15.118.465	17.429.864	12.547.913	-17,0%	-28,0%
CHEMICAL EU27				*-34,5%*	*-20,5%*
CEMENT FRANCE	10.937.299	9.108.285	6.806.672	-37,8%	-37,8%
CEMENT EU27				*-20,8%*	*-21,3%*

Source: Syndex, based on data from EEA.

- GHG emission reduction in the 4 energy-intensive sectors analysed in France between 2005 and 2019 were higher than the EU27 average for steel, non-ferrous metals and cement sector, which is not the case for the **chemical sector**.

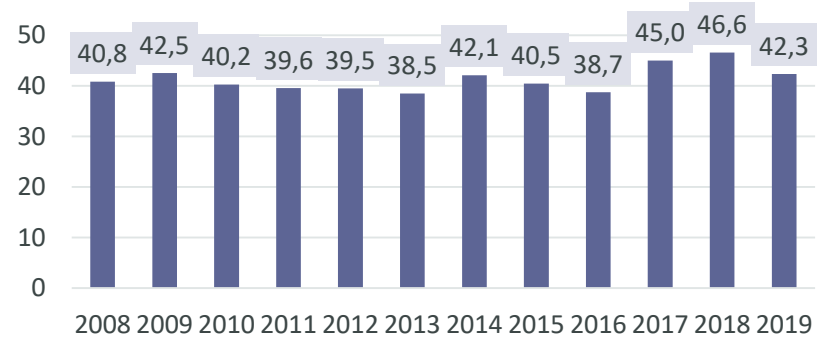
- However, and against this apparently positive trend, it must be taken into account the deindustrialisation process that has severely hit industrial sectors in France (and all around Europe) since several years. These figures must be taken as a reference but not as the sole and exclusive result of decarbonisation policies, as this decline is influenced by the closure and relocation of activities, both in France and in most of Europe.
  - **Iron and steel sector:** ArcelorMittal, the main player, has reduced in a significant way its geographical scope in Europe and France.
  - **Non-ferrous sector:** the leading players in the aluminium activity have undergone a delocalisation strategy based on carbon leakage and recently, Ferroglobe, one of the main players on the silicium and manganese activities, has announced its intention to close several sites in France.
  - **Cement sector:** Holcim-Lafarge merge has finally led to the closure and/or sell of different facilities.

APART FROM PROCESS AUTOMATION AND DIGITALIZATION IMPACTS, DELOCALISATION AND PLANT CLOSURES ARE EVIDENT IN THE EMPLOYMENT FIGURES FOR STEEL AND CHEMICALS

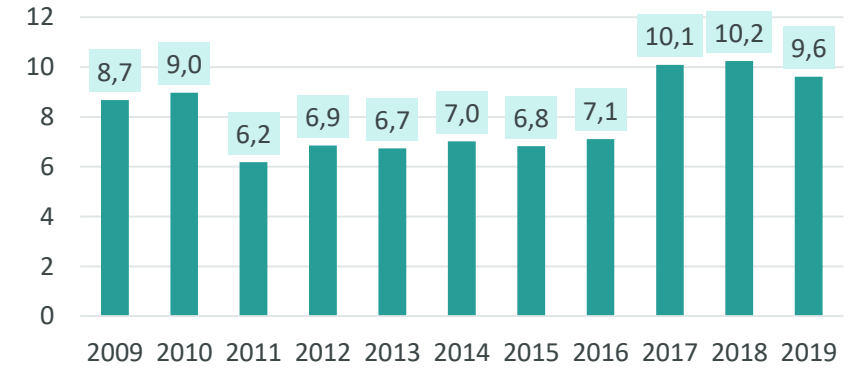
Direct employment in **steel industry** in France (source: Eurofer)

Employment in manufacture of **chemicals, pharmaceutical, rubber and plastic products** in France (source: Eurostat)

Employees in FTE in manufacture and articles of **cement, lime and plaster** in France, miles (source: SBS Eurostat)



Employees in FTE in **aluminium production** in France, miles (source: SBS Eurostat)



Note: These data are drawn from different official sources and attempt to reflect the employment situation in each sector as accurately and up-to-date as possible. However, there are significant divergences between sources which make it advisable to take these figures with caution.

LEGAL PROTECTION FOR TWO TYPES OF EII AND TWO EMPLOYER'S ASSOCIATIONS

LEGAL PROTECTION IN FRENCH ENERGY CODE SINCE 2005

Two types of enterprises: electro-intensive (EII) and hyper-electro-intensive (HEII) totaling around 500 companies (according to 2010 government study)

Criteria depending on:

- Ratio = annual electricity consumption/ value added produced
- Exposure to international trade
- Electricity consumption

Advantage of certain devices and tax exemptions in the payment of electricity consumption.

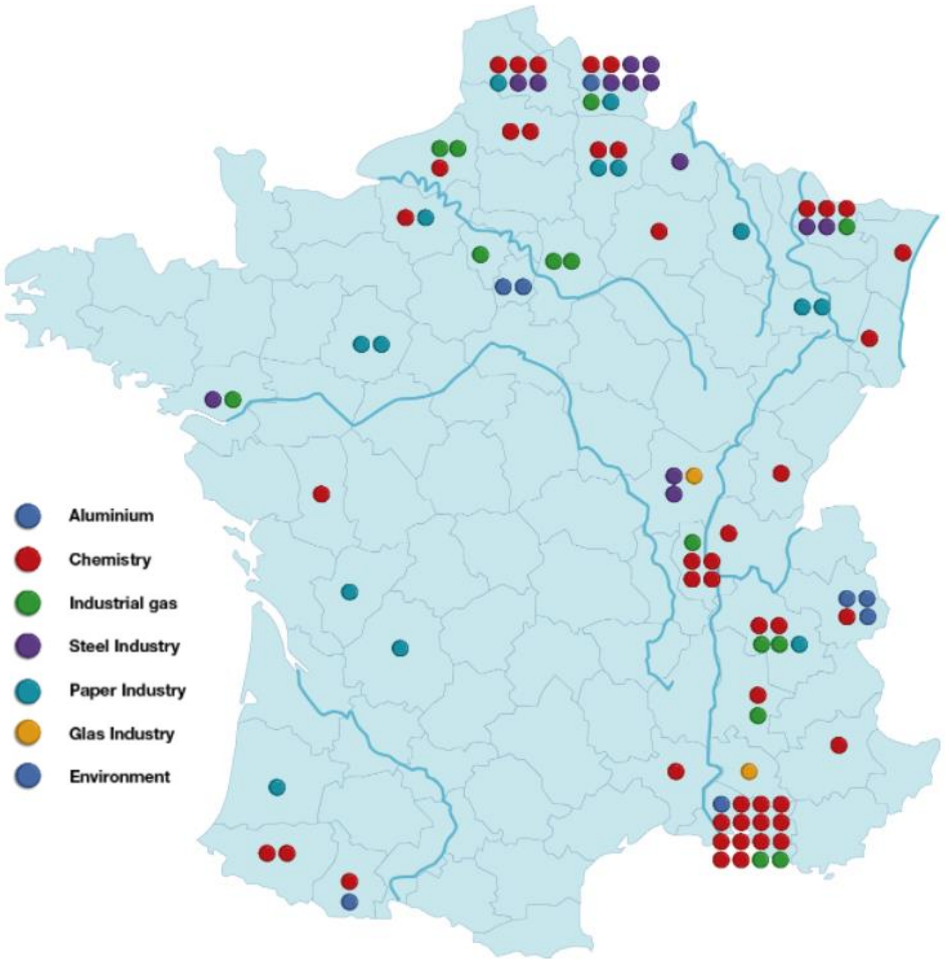
TWO EMPLOYERS'S ASSOCIATIONS

Exeltium: 27 companies (EII and HEII) from steel, aluminum, chemicals, industrial gases and paper sector with high electricity costs (between 15% and 50% of production costs)

→ 16 HEII plants representing almost 50 000 direct and indirect jobs

UNIDEN: A wider range of companies (mostly EII plants) from a large number of sectors (including steel, non-ferrous, chemical, construction, energy, agri-food, transport, etc.) representing about 70% of industrial energy consumption in France.

Industrial sites included in the Exeltium consortium by sector



A NATIONAL-LEVEL STRATEGY, SEVERAL SECTORAL ROADMAPS AND A SPECIFIC LEGAL STATUS FOR ELECTRO-INTENSIVE ENTERPRISES

- The National Low-Carbon Strategy, launched in 2014 and revised in 2020 aims to boost the effort to mitigate emissions into five-year periods. The current version, in addition to set an objective of carbon neutrality in 2050, also defines a carbon budget for the period 2029-2033. The strategy of carbon neutrality by 2050 implies first a complete decarbonisation of the French energy system. The targets set in the national policy include:
  - A complete withdrawal from fossil fuels.
  - Based on a total consumption between 1,100 and 1,400 TWh in 2050 (compared to more than 3,000 TWh in 2017), the associated energy mix would then break down into renewable and recovered heat or biomass systems (400 TWh), decarbonised electricity (between 600 and 650 TWh) and renewable gas production (between 195 and 295 TWh).
  - Emissions of the industrial sectors should be divided by a factor of more than five by 2050 thanks to: Energy efficiency gains; an increase in the electrification of energy demand; the development of recycling and circular economy; and the use of low-carbon materials and wood as a means of reducing demand for high-emitting products while storing carbon.
- Between April and May 2021, the government, together with the participation of social partners, launched the sectoral decarbonisation roadmaps for the mining and metallurgy, chemical and cement sector.
  - Following the latest impulse of the French government through the new “France 2030” plan, these roadmaps are likely to change in the coming months (e.g.: recent documents such as “Acceleration strategy on Decarbonisation of industry” or “Steel plan”).

MAIN DECARBONISATION PATHWAYS BY INDUSTRY AND TECHNOLOGY IN FRANCE

STEEL SECTOR	Reduction by 2030 compared to 2015 (MtCO2e or %)
Improving energy efficiency in steel production	not quantified
Increasing recycling rate of circular steel	around -2,6
Smart Carbon: innovation and technological developments in steelmaking	around -4,1
Blast furnace steel industry	-31%

CHEMICAL SECTOR	Reduction by 2030 compared to 2015 (MtCO2e)
Mature technologies	
Energy efficiency	-1,8
Biomass heat	-1,4
Solid Recovered Fuel heat	-0,8
N2O	-0,8
HFC	-0,9
Total	-5,7
%	-26%
Less mature technologies	
Low carbon H2	-0,9
CCS	-0,4
Electrification	-0,3
Total	-1,6
%	-7%
Total leviers	-7,3
%	-34%

ALUMINIUM SECTOR	Reduction by 2030 compared to 2015 (KtCO2e or %)
Improving the control of the electrolysis process in the manufacture of primary aluminium	-45 to -90
Improving energy efficency in transformation and recycling of aluminium	-10 to -15
Aluminium industry	-5% to -9%
	Carbon footprint reduction in 2030 compared to 2015 (MtCO2e)
Increase in recycled aluminium production capacity in France, replacing primary aluminium imports	-1,8

CEMENT SECTOR	Reduction by 2030 compared to 2015 (kCO2e/per tonne of cement)
2015	663
Alternative fuels	-55
Biomass	-24
Energy efficiency	-28
Clinker in cements	-110
CCS/ CCU	-313
Total	-530
Forecast 2050	133

Source: Roadmaps for mining and metallurgy, chemical and cement sector

THE POST-COVID ECONOMIC RECOVERY PLANS INCLUDED AN INCREASE IN PUBLIC FUNDS FOR THE DECARBONISATION OF INDUSTRY…

- Responding to the economic impacts of Covid, the French government announced the **France Relance plan** setting a proactive programme for decarbonisation of industry in 2020 by mobilising €1.2 Bn budget to create new financial aids and strengthen existing measures (operated by ADEME, ASP and Bpifrance)
  - This support has focused on available technologies, to ensure rapid implementation of projects and an immediate gain in performance of the industrial players supported.

Public support for industry decarbonisation through multiple devices

Several lines of public support in the form of co-financing of large (+ €3M) and small (- €3M) investment projects on **energy efficiency, process electrification, process adaptation**.

- Through a process of call for projects within a period of time.
- 30% to 60% financing of total cost for big projects
- IndusEE (large-scale projects on energy efficiency); IndusDECAR (process transformation projects); DECARB IND (energy efficiency, electrification, process transformation, etc.)

Support by process of call for projects on biomass heat and SRF use to reduce carbon emissions linked to industrial heat production and to develop circular economy

- Around 40% financing of total cost for biomass projects
- BCIAT 2021 (biomass); Energy CSR 2021 (solid recovered fuels)

Public aid in the form of subsidies (within European regulation framework) for investments projects, (re)location or reinforcement of facilities in strategic sectors and value chains

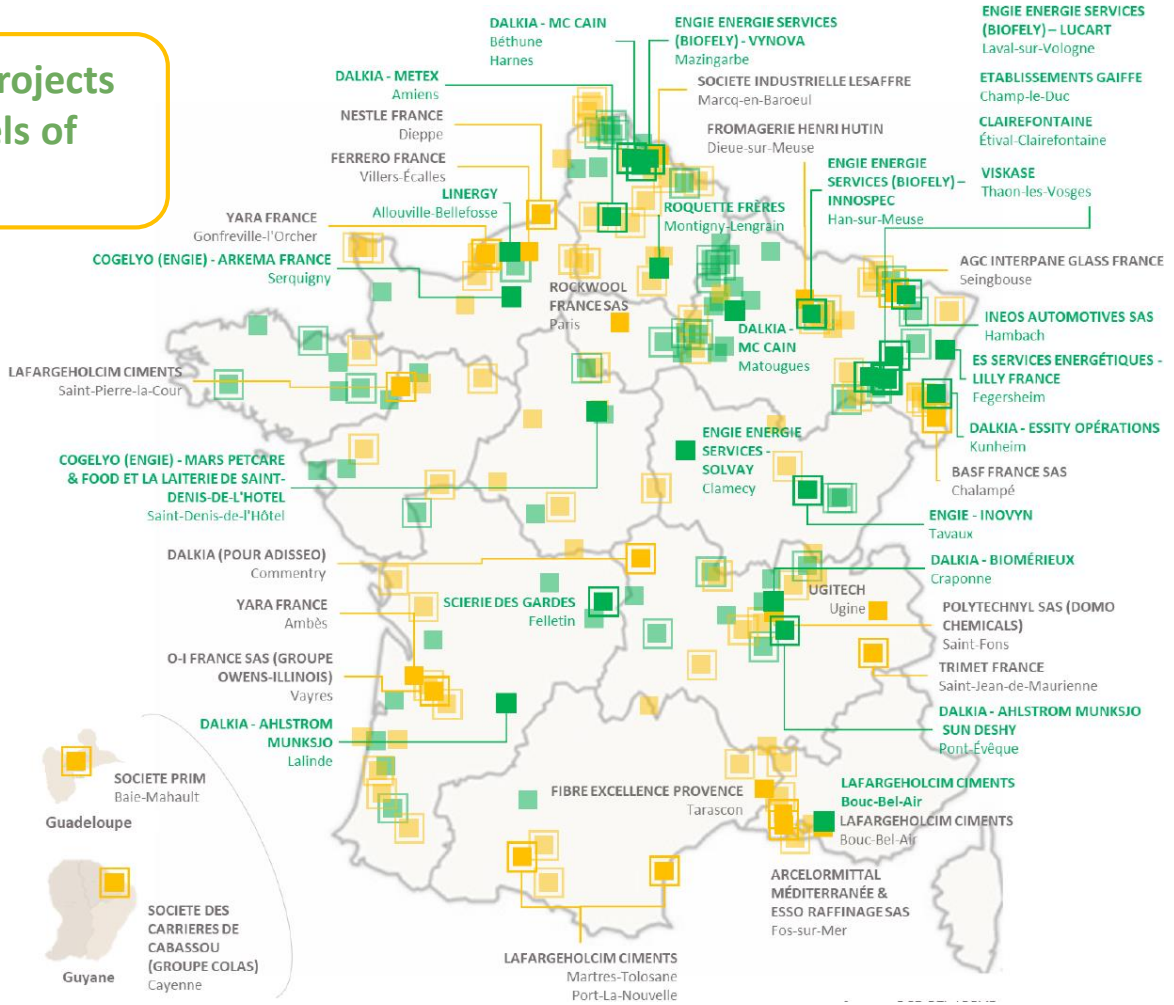
- Projects of at least €1 m budget of steel and non-ferrous metals, chemicals and materials sector

Territorial funds at regional level for at least 200 k€ industrial investments where, among other aspects, the regional impact and the commitment to decarbonisation are assessed.

… WHICH HAS MADE IT POSSIBLE TO FINANCIALLY SUPPORT 185 PROJECTS FOR THE TIME BEING…

Awarded decarbonisation projects by different credit channels of France Relance

- For the time being 185 awarded projects from 372 applications received
- €1 Bn of state aid
- €2,6 Bn of private industrial investments
- 3,6 MtCO2 avoided per year



Source: French government

… WHICH THE RECENT FRANCE 2030 PLAN INTENDS TO EXPAND WITH SIMILAR AND NEW MEASURES

- The **France 2030 plan**, announced Nov 2021, proposed a series of measures to achieve the ecological transition, among which was the allocation of €5 Bn to industrial sectors in two parts:
  - Part one (around €1 Bn): through support for the deployment of more mature solutions, particularly low-carbon heat and energy efficiency, throughout all industrial footprint and in all regions.
  - Part two (around €4 Bn): through support for the deep decarbonisation of high-emission industrial sites (e.g. steel, heavy chemicals, cement, aluminium).

Acceleration Strategy on decarbonisation of the industry

- 6 new call for tenders for 2022 and €610 m of public aid for industry.
- It covers all research and production value chain: academic and R+D research for breakthrough solutions; technological innovation and industrial processes; decarbonization of large industrial zones on a territorial scale; CCS and CCU implementation; training and skills development for workers.

Specific plan for the steel industry with 3 axes:

- **Improve conditions to create a more competitive sector at international level**: combating overcapacities of international markets through G20; strict application and improvement of trade defence instruments; ensuring reliable access to competitive low-carbon energy in the long term.
- **Achieving carbon neutrality by 2050**: boosting industry financing; 'carbon contracts for difference' (CCfD) implementation; developing the energy and electric infrastructure; market for hydrogen technologies; improving circular economy; markets to favour low-carbon or circular economy products; creating environmental standards for steel products traded in the EU; CBAM implementation.
- **Strengthen sector attractiveness through employment and skills**: Supporting companies in its digital transformation; creating and improving jobs through training and skills development

HOWEVER, SEVERAL CRITICISMS CAN ALSO BE MADE EITHER FROM A METHODOLOGICAL OR A TECHNOLOGICAL POINT OF VIEW

- As a matter of fact, and from a methodological point of view, the roadmaps seem to compile the initiatives and projects reported by individual companies, rather than constituting a tool designed by government, industry and trade unions all together.
  - The roadmaps collect all ongoing projects of companies from EII sectors without applying a comprehensive national vision to asses the situation of each industry and each territory and without considering possible synergies between research, technologies or companies.
  - Some companies are partnering to carry out their projects (the consortium of chemical companies Air Liquide, Borealis, ExxonMobil, Total and Yara International to create a major carbon-capture-and-storage facility in Normandy, France) but it is not a common practice.
- Regarding technology, the feasibility of several pathways (namely hydrogen and CCUS) is still under discussion (not to mention the financial issues of these two breakthrough technologies).

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EMPLOYMENT IMPACTS OF DECARBONISATION AND MEASURES TO MINIMIZE NEGATIVE EFFECTS

MANY DEVICES TO COUNTERACT NEGATIVE IMPACTS ON EMPLOYMENT BUT NO EXACT QUANTIFICATION OF AFFECTED WORKERS

- There is as yet no precise quantification of the employment impact of the transition from energy-intensive industries to low-carbon technologies. The decarbonisation impact on employment and skills is scarcely mentioned although some initiatives on vocational training are being implemented at national and regional level.

- The National Low Carbon strategy, revised in 2020, points out the following tools and support actions in favour of professional transitions and reconversions linked to the energy and climate transition:
  - The "employment and skills programming plan" (PPEC), which concerns only the energy sectors and takes into account the guidelines set by the Multi-Annual Energy Plan for continental metropolitan France (cf. energy transition for green growth act of 17 August 2015)
  - The Regional Economic Development, Innovation and Internationalisation Scheme (SRDEII) sets out the Regions' strategic economic guidelines;
  - The CTEs (ecological transition contracts), which set out with environmental, economic and social issues in a global approach by involving local authorities and companies;
  - The trials, mostly at regional level, such as the deployment in four regions of France of the Methodological kit to support professional transitions in sectors impacted by the energy and ecology transition, to develop potential professional careers
  - The GPEC system: the GPEC methodology should facilitate a collective understanding of employment and skills issues and the construction of cross-cutting solutions that simultaneously respond to the challenges of all the actors concerned: companies, territories and the workforce.
  - The government supports the prospective skills actions in the occupational fields through the Skills Investment Plan.
    - As part of the Skills Investment Plan, the co-financing by Pôle emploi (the French public employment service) of 10,000 training courses for jobs in the ecological transition.

AROUND €30 BN TO RE- AND UP- SKILL, RETAIN AND ATTRACT NEW WORKERS IN THE CONTEXT OF A HUGE INDUSTRY TRANSFORMATION

- The French Skills Investment Plan (2018-2022), **with almost €15 bn budget** (€7,15 bn at nation level and €6,8 bn at regional level), aims to upskill jobseekers with a focus on young and least qualified population, by providing vocational trainings, improving training schemes and training conditions and prioritising the strengthening of digital skills and jobs for the future.
  - Training for 1 million low-skilled/unskilled jobseekers and 1 million young people furthest away from the labour market, in particular people with disabilities and those living in urban policy priority neighbourhoods and rural regeneration areas;
  - Meeting the needs of companies facing recruiting difficulties;
  - Contributing to the skill-related process of transformation, particularly in light of the digital and green transitions.
  - Regional budget is allocated to regions as part of the Regional Skills Investment Pacts (2018-2022), taking into account the specificities of each region.
- The France Stratégie Plan (2017-2027), with €57 bn budget, setting out a broad investment plan with 4 priorities for the period to ensure France' sustainable growth dynamic.
  - Targets: Accelerating the green transition (€20 bn); **Building a society of skills (€15 bn)**; Rooting competitiveness in innovation (€13 bn); and Building the state of the digital era (€9 bn).
  - Funds: €24 bn will come from new budgetary measures, €12 bn from the reorientation of existing credits, €11 bn from loans, equity or guarantees and €10 bn will finance the third part of the future investment programme (PIA).
  - The plan is in line with the vocational training reform and complements the "Law on the freedom to choose one's professional future" in force since September 2018.

TRANSCO SCHEME: AN EXAMPLE OF HOW TO TRAIN A WORKER FOR NEW TASKS OR NEW JOB WHILE ENSURING HIS OR HER LIVELIHOOD DURING THE TRAINING PERIOD

- A practical example of the implementation of these measures is the Transco scheme (Dispositif Transitions Collectives), created in January 2021, jointly created by government and social partnerts) which enables employers to anticipate the economic changes in their sector and to support employees whose jobs are threatened to secure their career paths through a skill reconversion.
- The Transco scheme enables employees to undergo retraining for up to 24 months (or 2,400 hours) by having access to professional assistance in defining their re-skilling project while benefiting from financing during the training (the employee's salary is maintained, up to a maximum of 2 SMIC.)
- The Transco scheme has two components:
  - Collective Transitions - Transco is based on the legal support of the Professional Transitions Project (PTP).
    - This part of the scheme offers the employee the possibility of returning to his or her company at the end of the training.
  - Transco – Mobility leave, after the employer has concluded a collective bargaining agreement (RCC) or a job and career management agreement (GEPP).
    - In this case, the employee's remuneration is also maintained, with no limit.
- At the end of the training either the worker has two possibilities:
  - Return to his/her job or an equivalent position in the company they were in; or
  - Move to a new sector and find a job according to their re-skilling process.
- Professional transition platforms are deployed throughout the country to facilitate the matching of companies with employees wishing to retrain with those recruiting in promising sectors.
  - In this process the companies are assisted in setting up the system by local players (professional support and retraining delegates, DREETS, Transitions Pro associations, professional development counselling, skills operators, particularly for VSEs and SMEs).

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