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Antoine Bonleu, Olivier Joseph, Emmanuel Sulzer, Marie-Hélène Toutin

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Antoine BONLEU

(Céreq)

Olivier JOSEPH

(Céreq)

Emmanuel SULZER

(Céreq)

Marie-Hélène TOUTIN

(CLERSE, Céreq's Associated Centre in Lille)

Constructing the skills of the future in the construction and civil engineering (CCE) sector

From secondary-level vocational qualifications (CAP) to the elite engineering schools, the construction and civil engineering (CCE) sector offers a range of different training pathways for young people wishing to qualify in one of the sector's occupations. While it attracts large number of apprentices, it does not manage to retain enough of them throughout the apprenticeship period or to settle them in stable employment. Will the evolution of CCE occupations linked to the environmental and digital transitions be an opportunity to make the sector attractive again to young people? A study conducted by Céreq among professionals in the sector provides some preliminary answers.



TECHNICAL AND VOCATIONAL EDUCATION

MANPOWER MANAGEMENT

FORWARD-LOOKING OF JOB MANAGEMENT

CONSTRUCTION INDUSTRY

SCHOOL-TO-WORK TRANSITION

TREND IN QUALIFICATIONS

OCCUPATION IN THE PUBLIC WORK INDUSTRY

In the academic year 2017-2018, a total of 197,000 students were enrolled in secondary-level vocational training programmes in CCE occupations (cf. Box 1). Of them, 35% were enrolled in level 3 programmes (according to the European classification) of the CAP type or equivalent, 60% in vocational and technological baccalaureate programmes (level 4) and 5% in brevet professionnel programmes (a level 4 qualification equivalent to the baccalaureate). In higher education, there were 68,000 students enrolled in 2017-2018, of whom 41% were preparing for the brevet de technicien supérieur (BTS), 12% for the diplôme universitaire de technologie (DUT, level 5) and 15% for a vocational bachelor's degree (level 6); the remaining 32% were training as engineers (level 7). The classroom-based programmes in these occupations, from secondary level to the BTS (up to level 5) were relatively well distributed across the whole of France, while the distribution for apprenticeship-based programmes was much less homogenous, irrespective of level.

An initial training offer adapted to the economic fabric, encouraging a good training-to-work transition

Apprentices are overrepresented in the initial CCE training programmes. According to the Génération survey, 58% of the young people leaving such programmes in 2013 were in apprenticeships, compared with only 18% for all other training programmes. This overrepresentation is particularly marked at levels

3 and 4, where apprenticeships accounted for 79% and 45% respectively of exits from initial CCE training programmes, compared with 39% and 14% respectively for all other programmes. These figures have to be viewed in the context of the sector's highly specific economic structure, which is polarised between "a few majors* that dominate in terms of jobs and production capacities, and the more than 90% of companies with fewer than 10 employees with, in the middle, a few heavyweights, regional builders" (industry official). Depending on their size and the design of their production systems, companies make choices as to their future employees' level of training and the nature of their certification.

Thus the vocational bac seems to be less popular among small and very small businesses and artisanal enterprises, which prefer the CAP, which is acknowledged as the proven initial level of qualification. However, the vocational bac is appreciated and called for by large companies, in which activities are undoubtedly more segmented and where it may be the jumping-off point for employees wishing to continue their training up to BTS level. While few progress from CAP to BTS, trajectories involving a number of different CAPs or progression from the CAP to the BP (which can be achieved only via the apprenticeship route) seem to be the ideal-type training and competence acquisition pathways for small and medium-sized enterprises (SMEs). Moreover, the way in which block-release programmes are structured is another factor that contri-

* The CCE sector is characterised by the presence of three large companies that operate internationally and are known as "majors" (Vinci, Bouygues, Eiffage). They exist alongside a very large majority of small and very small companies and tradespeople.



1 The sector, the study and its methodology

According to INSEE, the CCE sector accounted for 15% of companies and 11% of all jobs in the market sector in 2017. According to DARES, it employed 13% of all apprentices in 2017 and recruited approximately 16% of all new entrants on apprenticeship contracts between 2014 and 2017.

In 2019, Céreq carried out a study of the training offer in the CCE sector on behalf of Constructys, the sector's vocational training support agency (opérateur de compétences or OPCO)**. The objective was threefold: to describe the qualifications dynamic in the CCE sector; to provide details of the training and labour market trajectories of those obtaining qualifications in the sector; and to investigate the challenges to be met in developing higher education block-release training programmes in the CCE occupations. This study combined a qualitative approach based on interviews with some twenty actors involved in the training-employment relationship in the sector with analysis of various sources of data on initial training programmes.

In the case of the secondary-level training programmes and the BTS, the data were taken from the FAERE (Fichiers anonymisés pour les études et la recherche/Anonymised files for studies and research) database maintained by the Department for Evaluation, Forecasting and Performance (Direction de l'évaluation, de la prospective et de la performance/DEPP) and derived from the SIS (Systèmes d'information scolaire/School information systems) and SIFA (Systèmes d'information de la formation des apprentis/Apprentice training information systems). For higher education programmes, the data come from the SISE (Système d'information sur le suivi de l'étudiant/Student tracking information system) database maintained by SIES (Sous-direction des systèmes d'information et des études statistiques/Sub-department for information systems and statistical studies) and DEPP's SIFA database.

Analysis of the school-to-work transition for first-time leavers from CCE training programmes (identified from the qualification code for the programmes that train young people for the sector's target occupations) was carried out using data from the 2016 wave of Céreq's Génération 2013 survey.

*** The vocational training support agency (opérateur de compétences or OPCO) is responsible for funding apprenticeships, improving the information provided for the employees of these companies about and their access to vocational training, helping the various parts of the sector to develop vocational certifications and supporting SMEs in identifying their training needs.*

tributes to the differences in certifications by type of company, since the number of weeks trainees spend in training centres, which is greater for the vocational bac (20) than for the BP (12), is sometimes regarded as penalising by SMEs. In higher education, progression from the vocational bac to short degrees (bac +2 or even +3) or from short degrees (bac +3) to more advanced degrees (master's or engineering courses) is more common, although 7 engineering students out of every 10 come from the preparatory classes for the elite grandes écoles.

As is the case for all young people entering the labour market, those trained in the CCE pathways transition into employment more easily at the end of their training if they have obtained a qualification, firstly, and, secondly, if they have completed an apprenticeship.

Young people with secondary-level qualifications obtained in the CCE pathways in 2013 enjoyed better conditions for their school-to-work transition than those leaving secondary education from other pathways. In the spring of 2016, three years after the end of their training, almost seven out of every 10 first-time leavers (68%) were in employment and young people trained in the CCE pathways were more likely to be in employment than the others with equivalent levels of qualification. The unemployment rate for young people with secondary-level qualifications was also significantly lower than that for young people who left the education and training system from other pathways at the same level. This advantage held good throughout the first three years spent in the labour market: almost two thirds of these young people trained in the CCE pathways had a history of stable employment at the three-year mark, compared with just a small majority of the young people with the same

level of qualification obtained in other pathways. The total share of time spent in employment for those with and without level 3 and 4 qualifications who left the education/training system from the CCE pathway was greater, and the share of time spent in unemployment was lower (cf. Box 2).

But the picture is marred by drop-outs and leavers heading for other sectors

This favourable training-to-work transition for young people leaving the CCE pathways should not conceal the difficulties that confront the actors in the sector.

Firstly, a significant number of those enrolled in the CCE training programmes fail to complete their courses: the share of those leaving without obtaining a qualification is 27%, compared with 13% for the other pathways according to the Génération survey. And young people on apprenticeships account for 60% of those who leave without a qualification (compared with only 17% for the other pathways). Thus the problem of broken apprenticeship contracts lies at the heart of the difficulties facing the CCE sector, where the share of broken contracts is higher than the intersectoral average (33% compared with 26% in 2017, according to 2019 DARES data). However, the sector suffers from an accumulation of factors that automatically increase this share: it is, after all, made up of a majority of small and very small enterprises in which the broken apprenticeship contracts are over-represented. It also has a higher share of apprentices aged under 18, an age group in which broken apprenticeship contracts are more common.

The occupations in the sector also seem to suffer from a lack of attractiveness, since only a minority of the young people trained in the CCE pathway actually go on to work in the sector. Just 44% of these young people find their first job in the sector; this proportion rises to 54% for apprentices and falls to 29% for young people who left from a school-based pathway. Three years into their careers, only 39% are still working in the sector (45% in the case of apprentices, 29% for those recruited from school-based pathways). (cf. Box 3)

If access to the target occupations is considered, or in other words if we look at the share of these young people who entered one of the CCE occupations in a company in the sector, only a minority actually do so. Thus only 35% of those who undertook the training found their first job in one of the construction occupations in the CCE sector and this figure falls to 29% when we look at the jobs they held in the spring of 2016.

A training policy sensitive to economic reversals

The CCE sector is very sensitive to the economic situation and since the end of the 2000s has been through a period of marked economic contraction that has adversely affected the training offer. This long-lasting crisis

2 Share of time spent in employment and unemployment by training pathway (in %)

→ Further reading

| Level of qualification | Young people trained in CCE | | Young people trained outside CCE | |
|--|-----------------------------|------------|----------------------------------|------------|
| | In employment | Unemployed | In employment | Unemployed |
| No qualification | 45 | 42 | 33 | 40 |
| CAP/MC | 67 | 28 | 58 | 31 |
| Vocational bac, BP, MC | 76 | 16 | 65 | 19 |
| All holders of secondary-level qualifications | 63 | 22 | 71 | 22 |
| All leavers from secondary education | 63 | 28 | 56 | 27 |
| Holders of higher education qualifications | 74 | 18 | 80 | 12 |
| Training pathway | | | | |
| School | 57 | 32 | 65 | 20 |
| Apprenticeship | 70 | 24 | 75 | 18 |
| Total | 65 | 27 | 67 | 20 |

Source: Céreq – 2016 survey of the 2013 cohort of school leavers. Scope: all young people in the 2013 cohort training in CCE occupations.

Example: The young people trained in the CCE occupations spent 65 % of the total time in employment, or 23 months out of a total of 36 months.

[1] *Les jeunes et le BTP : former ne suffit pas*, J.J. Arrighi, C. Gasquet, Céreq Relief n° 15, 2006.

[2] « Ruptures de contrat d'apprentissage et abandons dans le BTP », R. Aubertin, M. Le-coeur, G. Moreau in *L'apprentissage dans le BTP : une expertise en action*, J-O. Héron, S. Bel-luco, *Education permanente Hors-Série (CCCA-BTP)*, 12-2018.

[3] « L'apprentissage favorise-t-il toujours l'insertion professionnelle ? », B. Cart, A. Lene, M-H. Toutin in *20 ans d'insertion professionnelle et évolution : entre permanences et évolution*, T. Coupplié, A. Dupray, D. Ephi-phane, V. Mora (coord), Céreq essentiels n°1, 2018.

[4] « Comment l'apprentissage favorise-t-il l'accès à l'emploi des Cap-Bep ? », T. Coupplié, C. Gasquet, *Formation Emploi*, n°142, 2018.

[5] « Quelles sont les causes de la baisse de l'apprentissage dans l'enseignement secondaire ? », E. Pesonel, P. Zamora, *Insee Références*, 2017.

has particularly affected the supply of apprenticeship contracts, and construction is one of the sectors in which the number of apprentice jobs has declined the most (-27% between 2009 and 2014, according to 2017 DARES data).

With regard to employment, this recession has also led to an exodus of young people trained in the CCE occupations to other sectors less affected by economic ups and downs and more highly regarded in terms of professional standing. Thus the question of whether the skills that have been lost in a period of crisis will return to the sector in the event of an economic upturn is a recurrent one.

From the companies' point of view, we observe that a long period of economic contraction encourages the development of certain strategies (closing down building sites, use of concealed employment, recruitment of seconded workers or even employee poaching...) likely to make the actors less willing to provide training, for fear of losing the individuals they have trained, whether it be an established employee or an apprentice.

In the case of the subcontracting strategies adopted by certain major companies, which “carve up” the markets once they have been won and “divide up the work”, the question is whether “they are really going to take part in the creation of competencies, with shared learning for example, or delegate or even outsource the creation of competencies to the SMEs?” (actor in the vocational training system). However, “most of the SMEs that are heavily dependent on the majors are not in a strong enough position economically to provide training: lack of transparency on the construction sites and their nature, above all no time to provide training because their advantage is to work at lower cost”.

For independent SMEs operating in niche markets, the training process remains “fragile in terms of the interest in the sector as a whole” (industry representative). Moreover, the lifespan of companies is becoming a problematic factor for the creation of competencies in the near future. Finally, the sector also has to confront the question of the impact of the development of micro-enterprises and of sole trader or one-person businesses (autoentrepreneurs/micro-entrepreneurs), which find it more difficult to access the channels through which competencies are created and renewed by means of training.

The attractiveness of occupations and training, securing of trajectories

Faced with these difficulties, the actors in the CCE sector are banking on making the sector more attractive. The aim is to highlight the positive aspects of the sector's occupations (team working), their diversity, the importance of innovations (tablets) and, above all, the revamping of occupations and/or the appreciable changes in the competencies required to work in the sector. The materials used and the products and services offered are indeed becoming increasingly diversified. The sector's status is also being raised by its contribution to the energy transition and its efforts to improve energy performance, with strengthened product labelling, process and environmental requirements (HQE standards, C2C, BEPOS standards for positive energy buildings), and by the authenticated presence of artificial intelligence (IA) or the digitalisation of working practices given specific form in “digital modelling” (Building Information Modelling/BIM), which is being achieved through the “hybridisation” of competences and is transforming work activities. Finally, faced with increasing pressure to extract profit from production activities, a number of occupations are



3 Share of target occupations in the school-to-work transition of young people trained in CCE

44% of all young people trained in CCE find their first job in the sector

All apprentices trained in CCE in %



All school-based trainees in CCE in %

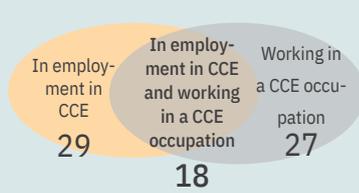


3 years after leaving training, 39% of all young people trained in CCE were in employment in the sector

All apprentices trained in CCE in %



All school-based trainees in CCE in %



Source: 2016 Céreq Génération survey of the 2013 cohort.

*** As part of the block release training programmes, the apprentice training centres (CFAs) give apprentices general and technical education and training to supplement the training they receive in the workplace.

shifting from a culture of expertise to one in which the focus is on management of a profit centre, with an increased emphasis on construction site management. Consequently, occupational profiles are increasingly highlighting the addition of administrative, human and commercial dimensions that are reinforcing the existing set of technical competencies.

Emphasis is also being placed on the transformation of CCE training programmes. While the level 3, 4 and 5 programmes in secondary education are said to be readily identifiable, those in higher education, which tend to span different industries and to be focused on support and related functions, have until now had a very low profile. The objective of industry actors is twofold. Firstly, they are seeking to make this landscape of higher education pathways easier to understand by improving communications with the institutions providing training. Secondly, they are focusing on the cross-cutting nature of training programme contents in order to make it a strong point. Thus training programme titles such as “technical and managerial”, “technical and environmental” and “technical with a focus on the greening of occupations”, which reflect the combinations of competences in the contents and assessment reference frameworks of the training programme, may constitute an argument in favour of the sector’s attractiveness.

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Sector actors are also taking action to secure training trajectories by renewing the fight against breaches of apprenticeship contracts. The prevention measures being taken with technical support from the CCCA-BTP (the joint body that coordinates some 118 block-release training centres (CFAs)*** and collects the apprenticeship levy) and the OPPBTP (professional health and safety organisation for the CCE sector) include, among other things, support in the drafting and signing of the contracts in the presence of 3 parties if possible (young person, company and training centre) in order to explain each party’s rights and obligations and to offer support and solutions should difficulties arise. Measures are also being taken to support the young people on a day-to-day basis, with due account being taken of any obstacles they may face outside of the actual training process (housing, family problems, health concerns etc.). Companies have their role to play and the approach taken by actors in the sector seeks to make employers and apprentice supervisors aware of the fact that an apprentice is a professional in the making and that “an apprenticeship represents an investment of time, and that investment doesn’t produce a return immediately” (manager of an apprentice training centre in the sector).

Having adopted an approach that seeks to construct the competencies of the future by relying on initial training, and in particular on apprenticeships, the CCE sector has for some years now faced a very unstable environment. The first challenge is to adapt to the changes initiated since the end of the 2000s by various reforms of the initial vocational training system, of apprenticeships, of the regulatory framework governing certifications and of regional governance. The second challenge is to deal with the consequences of the COVID-19 health crisis, which caused firms to abruptly halt all activity and very severely disrupted initial training. Because of the sector’s extreme sensitivity to the economic situation and the pro-cyclical nature of the block-release training offer, particularly at the initial level of qualification, the supply of competencies in the CCE sector has been significantly weakened in the immediate future as well as in the short and even medium term.

In order to overcome these tensions, the various actors involved in the sector are now, more than ever, unanimously agreed that the supply of occupations and competencies has to be the object of long-term planning as part of the environmental, energy and digital transition and must involve both initial and continuing training and a training offer implemented at both regional and national level.



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Publications manager:
Florence Lefresne
Translation:
Andrew Wilson

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Centre d'études et de recherches sur les qualifications
10, place de la Joliette CS 21321 • 13567 Marseille Cedex 02 / T. +33 (0)4 91 13 28 28
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