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## Educational Structure and Need for Qualifications in the Province of Carinthia

### With the Focus on the Manufacturing Sector

Against the background of the economic, employment, education and qualification structure in Carinthia, which has undergone considerable changes in recent decades, the question arises of what trends and prospects can be identified in the fields of vocational education and training (VET) as well as continuing education and training (CET). Contrary to prevailing clichés that Carinthia is a 'tourist region', data illustrate the high importance of the manufacturing sector and in particular of industry for value creation and employment in this federal province. What interconnections are there between this sector and VET/CET? What qualifications and competences do companies need to ensure Carinthia can hold its successful position?

#### Available qualifications – educational expansion & brain drain

Basically, **educational expansion** tendencies over recent decades and the current **qualification structure** of the Carinthian population differ only slightly from the overall Austrian structure: there is a clear reduction in the share of people who have no formal qualification above compulsory schooling and correspondingly increasing proportions of individuals with a qualification from upper secondary level or the higher education (HE) sector (that is: a university or *Fachhochschule*). Carinthia's qualification structure is only slightly more geared to the intermediate qualification level (particularly to the VET qualification tracks such as apprenticeship, VET school [BMS], VET college [BHS]).

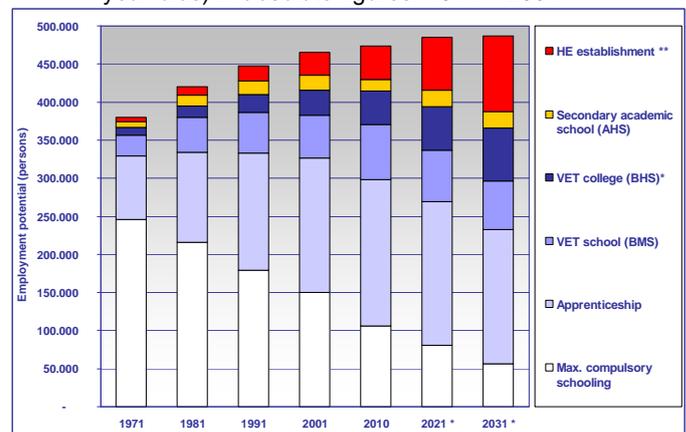
Many holders of the upper secondary school-leaving qualification *Matura* in Carinthia continue their educational career at HE institutions outside Carinthia because regional HE programmes do not cover the entire gamut of VET options, focuses or specialisations. Consequently students can only enrol in regionally 'lacking' VET pathways outside Carinthia. This also leads to a certain **brain drain** as a successive HE programme outside Carinthia will also frequently result in permanent 'emigration' of formally highly qualified Carinthians<sup>1</sup>.

#### Demographic aspects – future trends and challenges

Taking into account the demographically foreseeable developments in Carinthia – a decline of the potential workforce combined with their simultaneous ageing – the **forward projection of Carinthia's qualification structure development** reveals a **continuous higher**

#### qualification of the potential workforce but with a declining dynamic (cf. Fig. 1).

Fig. 1: Development and projection of the qualification structure of the potential Carinthian workforce (15- to 64-year-olds) in absolute figures: 1971 – 2031



Source: Statistics Austria, various censuses, \* ibw projection for the years 2021 and 2031

\* including post-secondary VET courses

\*\* university, Fachhochschule

The following **challenges** which are **relevant for qualifications** can be derived from this (these findings apply both to Carinthia and to Austria in general):

- Due to the declining age cohort of 15- to 19-year-olds (by some 25% by 2030), an increase of the potential for renewal caused by the influx of young cohorts can practically exclusively be achieved by '**intensifying**' the **qualification output of the initial vocational education and training (IVET) system**. Need for

action on the part of educational policy-makers can mainly be seen in terms of students' performance at the end of compulsory schooling (keyword: PISA study) and regarding exploitation of the entire (if possible) spare potential provided by young people, particularly youths with a migration background<sup>2</sup>.

- Due to the fact that the age group of 35- to 54-year-olds will decline in the future as well (by some 20% by 2030), **continuing vocational education and training (CVET)** is of major importance as the second component of qualifications. As well as increasing participation rates in the area of upgrading qualifications, but also higher qualifications, supplementary qualifications and qualifications obtained later in life by skilled workers and immigrant labour as well must be mentioned in particular in this connection.
- The ageing process of the potential workforce is additionally supported by the increase of over-49-year-old (particularly over-55-year-old) individuals. This clearly brings to light the significance of the third component for the renewal of the qualification structure: **CET in the segment of older workers** is gaining in importance.
- Against this background, lifelong learning seems to be a *conditio sine qua non* to appropriately meet the manifold changes and challenges in the labour market and the economy in terms of qualification-specific aspects. Therefore it is necessary to focus on increasingly creating links between IVET and CVET at all levels and regarding all aspects. It is important to already lay the foundation for lifelong learning processes during IVET and stimulate motivation for participation in them.
- Of extreme importance is also and in particular the attainment of job-oriented **upgrading qualifications**<sup>3</sup>, because estimations reveal that the predominant part of occupationally relevant knowledge and skills was taught at a time (and is therefore also related to a technological level) which does not come up to the current technological state of the art<sup>4</sup>. On an annual average across all sectors, about one quarter of all employees who have their place of residence in Carinthia take part in CVET measures. There are striking differences between sectors; ultimately this probably reflects the different needs of individual sectors.

### Qualification structure in the Carinthian manufacturing sector – focus on apprenticeship training

In the Carinthian economy, currently **one in four (26%) of the total of 261,000 employees works in the manufacturing sector**<sup>5</sup>. This underlines the high importance of the manufacturing sector and in particular of industry for value creation and employment in this federal province and questions the prevailing cliché of Carinthia being a 'tourist region'.

Clear differences can be observed between the three economic sectors in terms of their formal qualification structure. **In the manufacturing sector, apprenticeship training is the predominant qualification track** because about two thirds of all employees in this economic sector boast an apprenticeship diploma. When adding the share of 7% of employees with a VET school diploma, this gives the result that some three quarters of employees in the manufacturing sector have an intermediate qualification level. Another 10% have a VET college diploma, about 1% hold the *Matura* certificate from secondary academic school, and 4% an HE qualification. This segment compares with some 10% of employees who have no educational qualification beyond compulsory schooling.

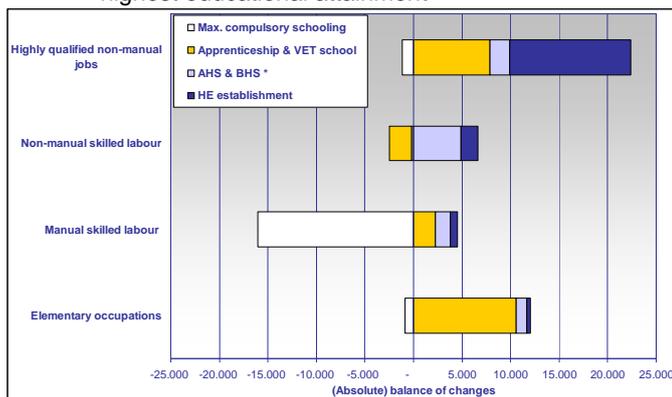
### Qualification-related and quantitative change in employment as an indicator of the development of the demand for qualifications

Regarding the longer-term **development of the demand for qualifications** it is useful to analyse changes in economic structures. When comparing the development of employment by economic sectors in Carinthia since the mid-1990s, several trends can be identified:

- Overall employment has grown by about 11% in this period: from some 235,000 employees in the mid-1990s to currently 260,000 people.
- The individual economic sectors have developed differently: the agricultural sector, for example, has been able to approximately keep its level of employees (or even increase it slightly). The manufacturing sector (industry, crafts and trade), however, showed a decline by 6% (i.e. by some 4,100 workplaces)<sup>6</sup>. The employment level in the service sector, by contrast, rose considerably (by 20% or some 30,000 workplaces), mainly due to the expansion of public services (+32%) and less strongly driven by private services (+13%).

These trends have led to a shift in the economic structure towards **tertiarisation**. The **change in the occupational structure of the Carinthian economy** is additionally characterised by **tendencies towards higher qualification**. This is proved by increasing employment levels and shifts in proportions towards occupational groups which usually have higher (formal) qualifications<sup>7</sup> while occupational fields with lower qualification levels are declining<sup>8</sup> (cf. Fig. 2).

Fig. 2: Balances of changes of Carinthian employees by occupational fields between 1995 and 2010; by highest educational attainment



Source: Microcensus 1994 and 2010; ibw calculations; the definitions of the occupational fields can be found in Table B-3 in Annex B of the main text of this study

Moreover, a trend towards higher qualifications can be observed in practically all occupational fields over time due to falling shares of people whose highest qualification is completion of compulsory schooling<sup>9</sup>. **Further growth in employment can also be expected both for higher qualified occupational fields and elementary occupations in the medium-term perspective until 2020** (findings of the ibw survey among leading enterprises also point in this direction).

### Recruitment difficulties and future challenges of Carinthia's manufacturing companies

Against the background of the presented qualification structures and related trends, the current ibw survey among leading enterprises<sup>10</sup> reveals **considerable structural and persistent recruitment difficulties** in Carinthia's manufacturing companies<sup>11</sup>: According to the survey, some two thirds of the questioned companies regularly encounter difficulties when filling vacancies with appropriately qualified staff. It is especially difficult for them to find sufficiently well-qualified **technical staff at all qualification levels**. In addition, companies frequently search in vain for appropriately qualified graduates of colleges of business administration (*Handelsakademie*) and staff with sufficient basic qualifications who have completed compulsory schooling (plus their induction period).

The main difficulty is that there are **too few applicants with the required specialist qualifications**. A lack of soft skills, by contrast, does not weigh so heavily although this is considered a reason for recruitment problems by as many as half of companies. 'Excessive' salary expectations or the lacking attractiveness of the occupational fields to be filled and/or the sector are practically irrelevant.

These regularly occurring recruitment difficulties often have a wide range of **consequences** for companies: only 4% of companies see no negative effects. As well as longer search efforts and related costs of the search, these are in particular a greater workload for 'all' employ-

ees (in 57% of companies), delays in order processing or even lost orders (every fourth company respectively).

As a response to recruitment difficulties, companies frequently attempt to recruit employees from other EU countries (in 13% of companies) and/or intensify their own training/CET measures (in 25% of companies).

**Company-based CVET and the companies' own apprenticeship training have the potential to reduce recruitment difficulties:** about half as many companies which organise above the sectoral average of company-based CVET activities expressed recruitment difficulties – training enterprises reported clearly less rarely than companies without in-house apprenticeship training that they were 'very frequently' affected by difficulties in filling vacancies<sup>12</sup>.

The companies of the Carinthian manufacturing sector frequently have to face not only persistent recruitment difficulties – they also see considerable **challenges they have to tackle in the future** (in the next five to ten years):

- They see the greatest challenge in **internationalisation** (two thirds of the companies expect that it will become clearly more relevant for their own company<sup>13</sup>). The second major challenge is customer orientation/customisation (40% of the companies assume that it will become clearly more important for them, another 50% that it will become more relevant for them at least to a certain degree).
- Many companies also see a clearly rising **pressure to innovate** on their manufacturing flows/processes as well as on their products and their development. Other major challenges are seen in **technical changes and their in-house implementation** and in some cases additional **changes to the internal work organisation**. **Demographic change** is also seen as a relevant field. Furthermore, many companies expect more **legal regulations/standards/specifications**.

Therefore the majority of companies expect **considerably rising requirements in terms of the staff's qualifications and competences**. In particular entrepreneurial thinking and acting, the ability to cope with situations under stress, and the willingness to learn and take part in CET are expected and demanded by all of them. Due to increasing internationalisation, mainly sound knowledge of English and other foreign languages are becoming more important (not so strongly rising, but nevertheless increasing requirements are also identified in terms of knowledge about foreign markets, intercultural action competence and the willingness to work for the company abroad, also over extended periods). The majority (73%) of companies assume that these increasing competence requirements will affect most of the staff.

The majority of companies currently only identify relatively low competence/qualification deficits among their staff in the mentioned fields. At least one in five companies finds more pronounced deficits for additional foreign

language skills apart from English and in terms of knowledge about foreign markets.

Due to the company size of the questioned leading enterprises, almost all of them employ people **over the age of 50**. Slightly more than half (58%) of companies offer programmes geared specifically to this age group<sup>14</sup> – in as many as one third of companies, there are several programmes running simultaneously. This means that the topic of **age management** has already been a focus in many Carinthian manufacturing companies. At the same time, however, it becomes obvious that additional efforts are required – which can be deduced by the still relatively high share (of about 40%) of companies who have not yet taken any concrete steps in this area. This must be seen against the background that the companies expect the share of older workers in the Carinthian potential workforce to increase. Therefore practically all companies assume that it will be more difficult in the future to find sufficiently young and well-qualified staff. The companies' responses to this assumption are increased investments in apprenticeship training and (partly as a complementary measure) increased supra-regional recruitment of skilled labour. But most companies also think they need to offer more measures that are geared towards older workers to ensure that these remain a part of the workforce for a longer time.

For the **next 3-5 years** a stronger **employment dynamic** is expected for **technical education and training qualifications** than for business-oriented or commercial pathways. In the medium term, positive employment prospects can be expected particularly for holders of technical qualifications (engineering college or *HTL*, technical VET school, technical programmes at university or *Fachhochschule*, part-time industrial master programmes). But a shrinking job market is likely for business school (*Handelsschule*) and compulsory school graduates. The employment situation for other qualifications (especially business-oriented and commercial pathways) will, on balance, most likely remain stable.

The following **conclusion** can be drawn from this: it can be expected that currently already existing structural and persistent recruitment difficulties – in particular for sufficiently well-qualified technical staff – will intensify further due to the development of demographic (due to ageing and the workforce's continuing higher qualification where there is a decreasing dynamic, however) and economic framework conditions (keywords: internationalisation, customisation, technologisation, etc.). To ensure that Carinthia can keep its attractive position as a location for manufacturing enterprises, sustainable and accelerated educational policy efforts are required on the part of all education and labour market actors in the fields of IVET, 'catch-up' qualifications obtained later in life, and CVET.

The entire study can be obtained from ibw (as ibw Research Report No. 169, ISBN 978-3-902742-53-7) and/or the Carinthian Federation of Industry (IV-Kärnten) or the Austrian Economic Chamber of Carinthia in printed form or [online](#).

<sup>1</sup> Only every tenth student from Carinthia who is completing an educational pathway outside Carinthia is planning to return to Carinthia after graduation.

<sup>2</sup> Based on current data it comes to light that Carinthia has one of the lowest shares of people with a migration background among all Austrian provinces. It is at about 10% (the Austrian average is almost 18%, and Vienna as the province with the highest share of immigrants has a proportion of around 36%). Empirical findings related to the school attendance and school choice of children/young people with a migration background point towards clear disparities both for Austria and for Carinthia: a lower share of young people with a migration background can be found in formally higher qualifying and thus also socially more attractive education and training forms. In addition it comes to light that many children from immigrated families do not continue their educational career following completion of compulsory schooling. At the same time, however, it is warned not to resort to simple stereotypes: an aggregated view of the group of 'foreign'/immigrant pupils veils considerable differences within this group.

<sup>3</sup> Other major developments also have an intensifying effect, such as (summed up in keywords): internationalisation, technologisation (particularly the further increasing impact of information and communication technologies), tertiarisation (especially the increase of service competences in the manufacturing segments), and ecologisation.

<sup>4</sup> Half of the Carinthian workforce in material goods production (and the manufacturing sector), for example, obtained their highest formal qualification 20 years ago or even earlier. Some 70% of all employees in Carinthia's manufacturing sector were awarded their formally highest IVET qualification more than 10 years ago. The technologies used, however, are probably not more than 10 years old.

<sup>5</sup> Around two thirds of the Carinthian workforce are employed in the service sector, the remaining 7% in agriculture and forestry.

<sup>6</sup> Even though not all segments of the manufacturing sector registered declines in employment.

<sup>7</sup> Such as technicians and associate professionals.

<sup>8</sup> Such as plant and machine operators, assemblers, and in some cases also craft and related trades workers.

<sup>9</sup> Correspondingly, increasing shares of the economically active population can be found with the upper secondary school-leaving qualification or an HE qualification (and rising or constantly high proportions of people with an apprenticeship diploma or VET school qualification).

<sup>10</sup> A total of 49 – mainly medium-sized and large – Carinthian enterprises (with 50 or more employees) participated in the ibw survey among leading enterprises of the manufacturing sector. The questioned companies cover 42% of all Carinthian staff in manufacturing companies with 50 or more employees, which constitutes a significant degree of representativity especially concerning questions related to the demand for skilled labour.

<sup>11</sup> To obtain an assessment that is not influenced by the current economic situation, companies were explicitly asked if they had encountered any difficulties in the search for suitable staff regularly in the course of the past three to five years.

<sup>12</sup> Training companies are, in addition, clearly more frequently 'never' affected by recruitment difficulties.

<sup>13</sup> Another 15% of companies expect that the importance of internationalisation will at least increase to a certain degree.

<sup>14</sup> Such as CET programmes for older workers, specific experiential/know-how transfer/mentoring programmes, health-related programmes, (age-specific) flexibilisation of working time, teams with members of mixed ages.