

## **Vocational training for the woodworking industry – German experiences and Indian perspectives**

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### **Introduction**

Wood always has been a very important raw material in Germany. Before the industrialisation began some 150 years ago it was used for nearly for every purpose. Even the production of metal was completely depended on wood in terms of mining construction and process energy. This was the main reason to develop the idea of a sustainable wood production during the 18<sup>th</sup> century in Central Europe: The Kings became aware that no production of silver, copper etc. would be possible on the long run if the forests would be furthermore overexploited and destroyed. Of course, the increasing use of coal and of fertilizers in agriculture reduced the pressure on the forest land and made the rehabilitation of productive forest stands finally feasible.

While preparing for WW II, the German Government strongly boosted wood science and technology. Having the experience of WW I the Germans knew about the importance of this locally available resource in case of a war because Germany had been cut off from the supply of steel and other raw material imports (Glesinger 1949). In this regard, it was obvious that to make a maximum use of the limited wood resources well skilled workers were necessary, especially at the beginning of the processing chain. Accordingly, among some other initiatives in 1939 a technical school for saw millers was founded in Bad Berleburg. After WW II it was relocated to Bad Wildungen, and for the last two years the author is working there.

Nowadays, not only Germany but all countries in the world are facing an increasing scarcity of many raw materials. Wood is one of the few among them which is renewable – if properly managed. And, it is less environmentally harmful than others

like steel, concrete and plastics: good reasons to focus on the sustainable production and efficient use of wood wherever possible.

A basic precondition of an efficient use of any material is the availability of well skilled personnel all over the processing chain. Germany, a quite small state, and poor of natural resources managed to become the global leader in terms of exports of industrial goods after the disastrous destruction of its infrastructure during and after WW II. It surpassed the U.S.A. more than a decade ago, but was recently surpassed by China. This strong industrial success in Germany was only possible because German companies are participants and users of an outstanding dual vocational training system.

### **The Dual System of vocational training in Germany**

An essential characteristic of the Dual System of vocational training is the cooperation between (largely) private companies, on the one hand, and public vocational schools, on the other. This cooperation is regulated by law. The Dual System can also be defined as a combination of learning in the “serious” world of the company career and learning in the “protected” world of the vocational school, where the companies concentrate on training practical skills, while the vocational schools focus on imparting theory. Today’s system was created about 50 years ago, but its roots go back to the skilled trades of the Middle Age and to the introduction of trade-oriented Sunday schools of the 17<sup>th</sup> and 18<sup>th</sup> century. An important step was undoubtedly the Industrial Code of the North German Federation issued in the year 1869. According to this code, “... assistants, journeymen and apprentices, or individual classes of the same, “ could be “obliged by town statutes to attend a further training school of the town, as long as they had not reached eighteen years of age, and the employers and master craftsmen are obliged to allow the time required for attendance” (Art. 142). Today the Dual System in Germany encompasses all sectors of the economy, which basically are all regulated in the same manner.

Of course, not all companies are carrying out their own training: For example, approx. 40 percent of small companies (5 to 9 employees), 50 to 75 percent of companies

with between 10 and less than 200 employees, and 87 percent of the large companies with more than 1000 employees are involved in vocational training. To be allowed to do this a company needs a foreman with a qualification of a master craftsman. Master courses therefore include lectures about how to motivate, teach and educate young people properly. The apprentices get a small wage which is fixed by negotiations with the trade unions for every industrial branch separately (Arnold, Münch 1996).

Why do many companies decide to train their apprentices themselves? It is basically for the following reasons:

- Practice-related (usable) qualifications can only be gained in real company situations (relation to practice).
- The behavioural pattern and personality characteristics required for professional work can only be developed in company practice (experience through company socialisation).
- In-company training pays off, be it because the trainees themselves already produce goods and create added value, or because later familiarisation, instruction and teaching costs are eliminated or minimised (cost-benefit ration).

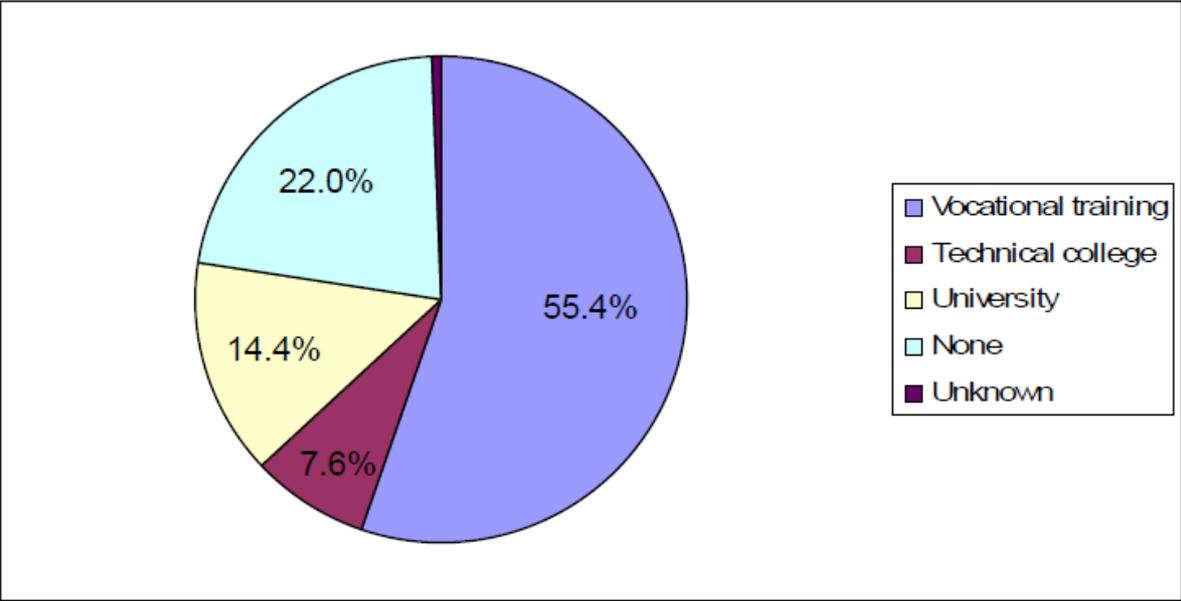


Figure 1: Highest level of professional education of more than 20 year old Germans in 2007 (Source: DESTATIS: Datenreport 2008)

Today more than half of the German population has successfully completed a vocational training. There are quite a number of people who first do this and later go for further education at a technical college or a university. But, of course, most of the university students come directly from grammar schools.

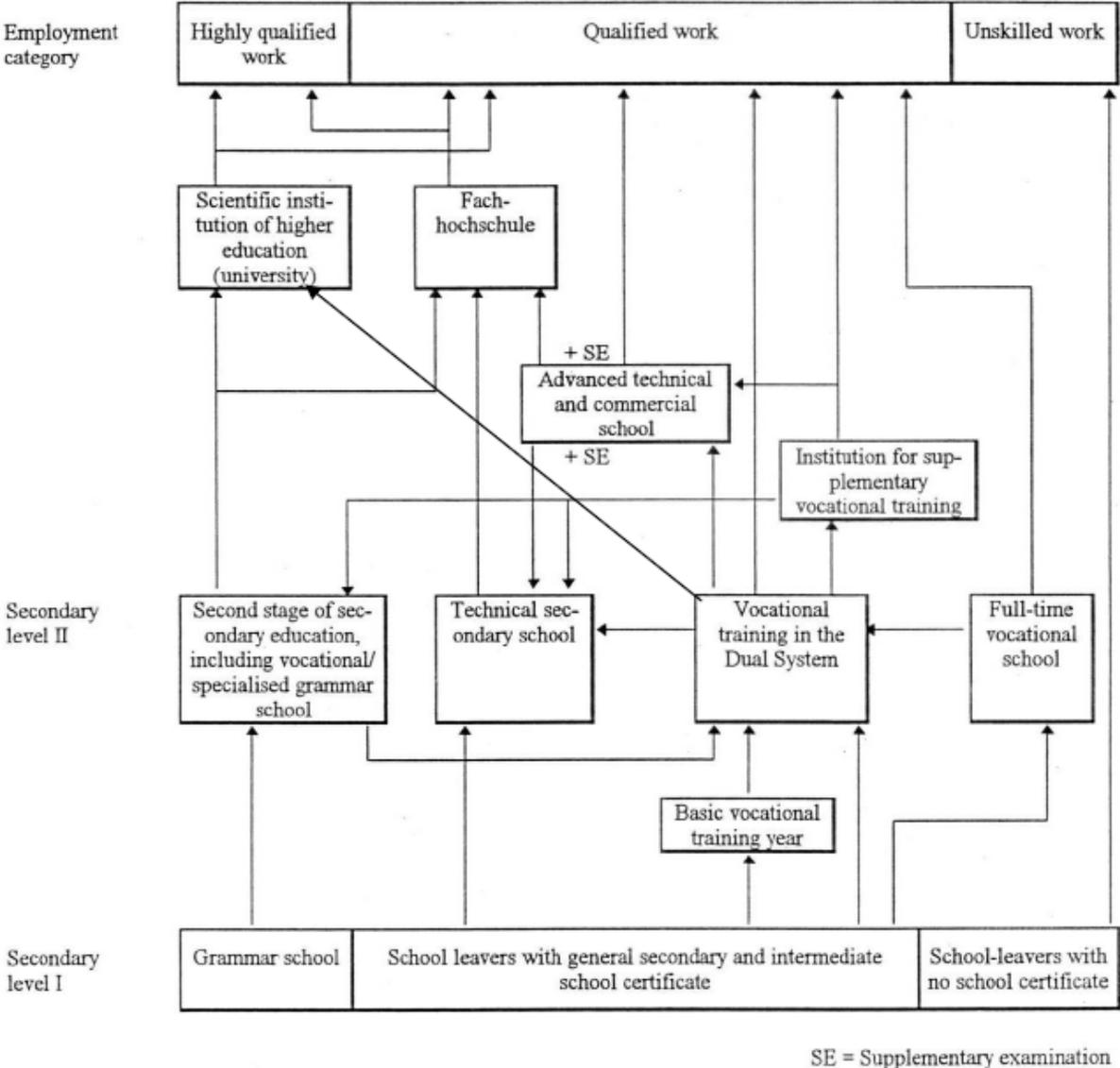


Figure 2: Selected education and career path to highly-qualified, qualified and unskilled jobs (Source: Arnold, Münch 1996)

Generally it can be stated that the pathways of education in Germany are becoming more and more diversified.

## **Vocational training in the wood branch**

Some centuries ago there were quite a number of professions working with wood as the main and very versatile raw material, like brush and paintbrush makers, cooper, etc. which are nearly extinct today. The actual list of professions in Germany which mainly are working with wood includes:

- Joiner (furniture production and interior finishing)
- Carpenter (timber construction)
- Wood processing mechanic (primary wood processing)
- Wood mechanic (industrial production of furniture, wooden building elements and packaging)
- Parquet recliner
- Wood sculptor
- Maker of woodwind musical instruments
- Maker of plucked musical instruments
- Wooden toy maker

For each of these professions there is an enactment issued by the Federal Minister of Economy and Technology. It describes in detail the duration (usually three years), aims, and content of the vocational training and of the exams. In addition, the Conference of the German states Ministries of Culture and Education issues a curriculum for the schooling part of the dual system.

To explain this more in detail, the educational objectives and the basic curriculum for wood processing mechanics are given here:

Generally the apprentices shall gain professional expertise, self-awareness and social skills by attending the vocational school. The general lectures include German, mathematics, politics/economy, and religion.

The technical courses are grouped in learning areas and listed on table 1.

Table 1: Learning areas for wood processing mechanics in Germany  
(Source: Rahmenlehrplan; Beschluss der KMK vom 29.01.2004)

Learning area		Reference number of lessons		
No.	Title	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year
1	Choose wood for the production	80		
2	Make simple products	80		
3	Season timber naturally	60		
4	Grind tools	60		
5	Produce sawn timber		60	
6	Produce planed goods		40	
7	Apply wood preservatives		40	
8	Produce glue lam products		40	
9	Produce wood composites		60	
10	Measure and classify wood products		40	
11	Segment logs and optimise recovery			60
12	Repair and assemble tools			60
13	Kiln-dry wood products			60
14	Make special wood products			100
	Sum (total 840 hrs.)	280	280	280

The knowledge is imparted during six stays of 5.5 weeks duration each in the school. For each of these learning areas there is a detailed description of its goals and content. As an example the respective information for learning area 11 (Segment logs and optimize recovery) is given here:

“Goal setting:

The apprentices chose the appropriate logs or other raw materials for the respective order in an optimal way. They do the necessary measurements and calculations under considerations of wood characteristics like knots, reaction wood, spiral grain etc.. The respective sections of the logs have to be stored according to their diameters and in compliance with the orders before further processing.

The apprentices optimize the raw material according to technological, economical and ecological aspects. Based on the results measures for the further processing are taken. The apprentices have to document their results.

Content:

- Log yard
- Conveyer systems
- Measuring methods and rules
- Classification and grading of sawn timber
- Optimization of volume and quality”

## **The Indian situation**

There are some 17 ministries/departments in India which provide and finance vocational education and training programs, with a wide variation between programs offered by different Ministries in terms of scope, target groups, curriculum, duration, and testing and certification. In many cases, various courses are offered in an ad-hoc manner and are need-based.

There are six ministries/departments offering programs which are targeted at those who leave grade 8. These programs are usually between 1-3 years duration, with a prescribed standard curriculum and examinations.

A World Bank report, prepared at the request of the Government of India, stated that the actual system is not efficient: Employers still experience problems finding employees with the right skills. In most cases, these shortages were in trades that were supplied by the Government Industry Training Institutes (ITIs) / private Industry Training Centers (ITCs) – implying that their graduates did not suit employers’ needs. Most employers felt that ITI graduates did not perform well enough in the use of computers, practical use of machines, communications and team work practices. Employers also felt that graduates lack practical knowledge and need significant on-the-job training to bring their skill levels to match the needs of the industry (The World Bank 2006).

The Pandit Sunderlal Sharma Central Institute of Vocational Education (PSSCIVE) is a central institution working on the development of vocational education (VE). Its activities have resulted in increased social awareness about the needs, objectives and usefulness of the VE amongst the students, parents, teachers, employers and

the society at large. As an outcome of the awareness, the social acceptability and demand of the VE has increased to a certain extent. About 4 lakh students are enrolled in about 150 vocational courses running in 5600 higher secondary schools. The only curricula related to wood the PSSCIVE is offering among the Engineering and Technology non formal Modules (building construction) are for carpenters (Carpenter Attendant, Carpenter and Master Carpenter) (PSSCIVE 2011). India’s overall skill development target (500 million skilled people by 2022) shall be achieved through “market making” initiatives that act like a catalyst in increasing private sector involvement in equitable skills development. The National Skill Development Corporation (NSDC) actually is asking for proposals and offering soft loans per person trained per week to a group of entities (the “Consortium”). The priorities are encompassing some timber related sectors, such as “Building and construction”, “Building hardware and home furnishings“, and “Transportation/ logistics/ warehousing and packaging” (NDSC 2011).

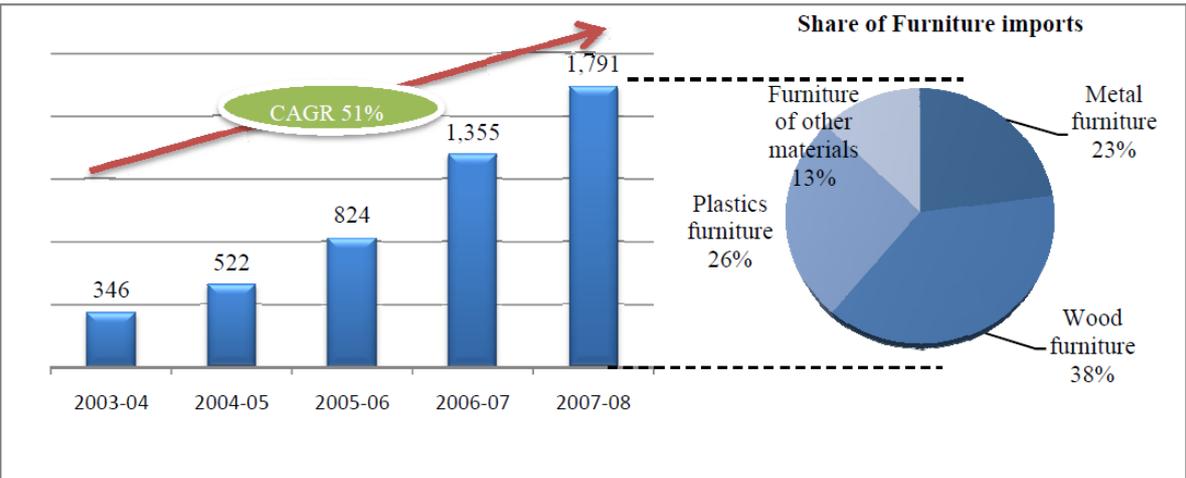


Figure 3: India’s furniture imports (Rs crore) (Source: NSDC 2008)

A report of the NDSC (2008) explains the situation and needs of the Furniture and Furnishing Sector in India: Due to the housing boom (demand for over 24 million new dwellings by 2015), and the growth in the tourism and hospitality industry the demand for furniture is strongly increasing. This promising situation for the Indian producers is severely derogated by a stiff competition of foreign companies in both the premium and mass market. If it is possible to keep pace with the international quality standards, the production of furniture and other wooden products for housing like

flooring and windows would offer great chances to create new jobs in India. Vocational training is essential for this.

### **Indo-German Cooperation**

As one approach to meet the growing demand for vocational training in India an Indo-German Joint Working Group had been formally established in March 2009. It is chaired by the Indian Ministry of Labour and Employment (MoLE) and the German Ministry of Education and Research (BMBF). Members of this working group are the Federation of Indian Chambers of Commerce and Industries (FICCI), the Confederation of Indian Industries (CII) as well as the Ministry of Human Resource Development (MoHRD) on the Indian side. German members aside BMBF are the Federal Ministry of Economic Cooperation and Development (BMZ), German Federal Institute for Vocational Education and Training (BIBB) and others. This working group acts as facilitator for projects and initiatives regarding the involvement of Indian and German companies in training in India, the upgrading of (Model) Industrial Training Institutes (ITIs), the training of trainers, the development of standards, the transparency of qualifications and learning and teaching materials (BIBB 2011). In October 2010, Shri Anand Sharma (Minister of Commerce & Industry) together with a delegation of the Federation of Indian Chambers of Commerce and Industries (FICCI) signed a MoU with German institutions of vocational training. (iMOVE 2011)

Within the framework of this cooperation the College of Wood Technology Bad Wildungen is ready to share its experience of more than 70 years regarding the vocational training of wood processing mechanics, joiners and wood technicians with interested companies and schools in India.

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