

# THE VISHWAKARMA APPRENTICESHIP EDUCATION PROJECT



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KNOWLEDGE TRANSFER  
FROM SWITZERLAND  
TO INDIA

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THE RAJENDRA & URSULA JOSHI CHARITABLE FOUNDATION



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PUBLISHED BY  
RAJENDRA & URSULA JOSHI CHARITABLE FOUNDATION

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# सा विद्या या विमुक्ताया

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## TABLE OF CONTENTS

<b>Introduction</b>	<b>05</b>
<b>Knowledge transfer from Switzerland to India</b>	<b>06</b>
The Vishwakarma Apprenticeship Education Project in a nutshell	07
The initiators of the Vishwakarma Apprenticeship Education Project	09
Dual education – a brief explanation of the concept	10
The dual system in Switzerland	11
<b>Swiss trades: a series of portraits</b>	<b>19</b>
<b>The current situation in India</b>	<b>29</b>
An assessment of the present situation with a view to the future	30
The dual system: the key to equal opportunity for young Indians	35
<b>Adapting the Swiss dual system to Indian conditions</b>	<b>39</b>
Benefits of the dual system in India	45
Statements by the social partners	47
<b>Implementation of the dual system in India</b>	<b>50</b>
<b>Contact addresses</b>	<b>52</b>

# INTRODUCTION



सत्यमेव जयते



भारत का राजदूतावास, बर्न  
EMBASSY OF INDIA  
BERNE

Tel: 00-41-31-351 1110

Fax: 00-41-31-351 1557

Email: india@spectraweb.ch

Add: Kirchenfeldstrasse 28, CH-3005

India and Switzerland are currently celebrating the 60th anniversary of the Indo-Swiss Treaty of Friendship. The six decades of close relations between the two countries has brought immense benefits and goodwill to either side. During this period, all areas of bilateral relations encompassing the entire gamut of political, commercial, cultural and consular affairs including academic links between universities, cultural exchanges and cooperation between private companies have grown manifold.

Switzerland was an important trading partner for India even before we attained our independence from Britain. Amongst other things, it has also been a significant source of high technology for a range of Indian industries including textiles, precision machinery, chemicals and pharmaceuticals. Periodic high-level visits between the two countries, including that of our President Dr. A.P.J. Abdul Kalam to Switzerland in May 2005 and the return visit of the Swiss President, Federal Councilor Ms. Micheline Calmy-Rey to India in November 2007, have further cemented our bonds of friendship. The 14,000 strong Indian community (including PIOs) living in Switzerland is largely made up of professionals and academics who have helped to raise India's profile in this country. Understandably, all these factors have contributed to a stable and mutually beneficial relationship between our nations.

A key issue that has emerged from the exchange of experiences between Indian and Swiss authorities and companies is the need for sharing and developing in-depth vocational training oriented towards proper and timely assimilation of technological and scientific changes. In this regard, the Swiss dual-track Vocational Educational and Training System (VET) appears to be well suited to meet the increasing demands of the Indian economy for well skilled and trained manpower. It is particularly noteworthy that the VET model, suitable for both industry and our young people, combines practical on-the-job training with education at vocational schools for a wide range of apprenticeships.

To take this process forward, a highly promising initiative, titled the 'Vishwarkarma Apprenticeship Education Project', has been launched by the Rajendra & Ursula Joshi Charitable Foundation. It is currently being evaluated by a number of well-known industrial companies in India. I take this opportunity to extend my appreciation and best wishes to the Foundation for the successful completion of the Project.

Berne, August 5, 2008

  
Ajaneesh Kumar  
Charge d' Affaires a.i.

# KNOWLEDGE TRANSFER FROM SWITZERLAND TO INDIA



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# THE VISHWAKARMA APPRENTICESHIP EDUCATION PROJECT IN A NUTSHELL

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**W**e are introducing a new system of apprenticeship education and training in India, what in Switzerland is known as the ‘dual system’, or a combination of on-the-job training and vocational school.

Economists, entrepreneurs and politicians all agree: Switzerland’s economic success may be principally ascribed to this combination of theory and practice, as borne out by the careers of many leaders in the Swiss industrial and service sectors.

The main benefit of the dual system is socio-economic: since it offers solid training virtually without imposing a financial burden on apprentices or their families, it is open to all levels of society. Educational opportunity is thus not a function of purchasing power, but exclusively of a thirst for knowledge and a talent for work. The dual system thus provides Switzerland’s industry and trades with ample numbers of skilled personnel every year, and in the process furnishes practical proof of its economic and social efficacy. Furthermore, the training model is also responsible for a remarkable increase in productivity, and has a positive effect on youth unemployment as well.

A project initiated by the Rajendra & Ursula Joshi Charitable Foundation (JCF) in Rajasthan has convinced us that the Swiss dual system meets with significant approval in India. Economists, education specialists and progressive businesspeople are lending their expertise to our adaptation of the Swiss apprenticeship education project to India’s eco-

nomie and demographic realities, as well as to its thoughtful implementation in India. The JCF also receives support from Switzerland’s business world, public sector, corporate members of industry associations and vocational schools.

**The aim of this presentation is threefold. We want first of all to convince you of the merits of the pragmatic training system on the Swiss model. At the same time, we intend to show you the potential practical benefits of the dual system for your own organisation. And finally, we would also like to explain how you can play a role in this key reform process.**

Thank you for taking the time to hear us out.

Sincerely yours,

**JCF**  
**Rajendra & Ursula Joshi**  
**Charitable Foundation**



Dr. Rajendra K. Joshi  
President



Ursula Joshi  
Vice-President



Vishwakarma – the champion of all craftspeople and architects – is the patron deity of our project.

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# THE INITIATORS OF THE VISHWAKARMA APPRENTICESHIP EDUCATION PROJECT

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## THE RAJENDRA & URSULA JOSHI CHARITABLE FOUNDATION (JCF)

The Rajendra & Ursula Joshi Charitable Foundation was founded in Zurich, Switzerland by Dr. Rajendra Kumar Joshi and his wife Ursula Joshi. The main aim of the foundation is to extend the industrial training currently on offer from Indian institutions with an apprenticeship education system similar to that in use in Switzerland, Germany and Austria.

Dr. Rajendra Kumar Joshi's initiative is based on experiences that began in the 1960s. Back then, he analysed the success factors that had led to the economic boom in the markets of German-speaking countries. He formed the view that the high standard of professionalism in Switzerland, combined with a strong work ethic, was partly due to the solid training provided by the dual system.

Both Dr. Joshi and his wife were actively involved in the professional training of young people in Switzerland. The question therefore arose as to whether, and how, the dual system model could be adapted to Indian conditions. Detailed enquiries involving experts in both countries strengthened Dr. Joshi's vision of institutionalising efficient knowledge transfer from Switzerland to India. The establishment of a foundation, followed by agreements with decision-makers in the two countries, rapidly emerged as a promising and pragmatic solution.

On 2 November 2006, Dr. Rajendra Kumar Joshi and his wife Ursula Joshi set up the Rajendra & Ursula Joshi Charitable Foundation. As a Swiss foundation with international aims, it comes under the supervision of the Swiss Federal Department of Home Affairs. The Foundation pursues no commercial interests. It has proven to be the best form of organisation to promote the exchange of experiences and know-how transfer between Switzerland and India. Already, less than two years after its creation, it has created a firm basis for the Vishwakarma Apprenticeship Education Project. That is the subject of this presentation.



Dr. Rajendra Kumar Joshi and  
Mrs. Ursula Joshi

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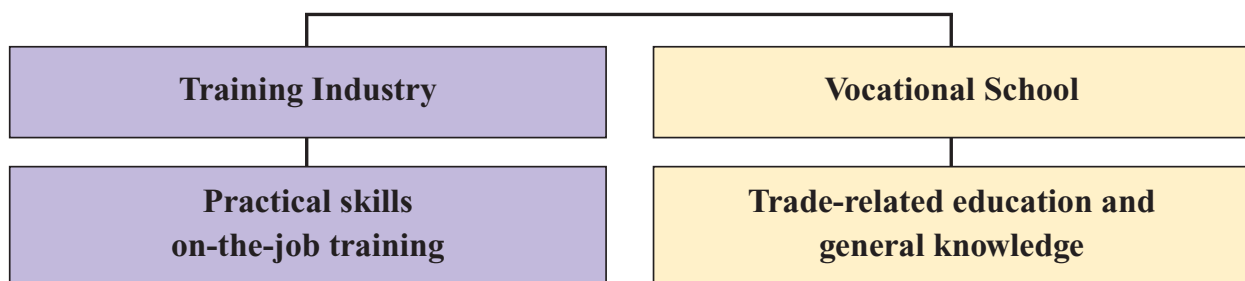
## DUAL EDUCATION – A BRIEF EXPLANATION OF THE CONCEPT

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The basis of the dual system is a contract signed by the apprentice and the business concerned in conformance with the law. Under the terms of such a contract, the apprentice undertakes to learn the theory necessary for his or her chosen trade by means of regular attendance of a vocational school, while acquiring practical experience on the job.

The dual system of vocational education and training enjoys a venerable tradition in Switzerland, Germany and Austria, where it makes an important contribution to national economic success.

The Rajendra & Ursula Joshi Charitable Foundation (JCF) aims to transfer know-how garnered in the dual system from Switzerland to India, and thus use the experience of one federal state to make a significant contribution to the apprenticeship education of the other. To this end it supports both the private sector and public corporations in their efforts to adapt the Swiss model to Indian society, a knowledge transfer which also enjoys the support of the authorities, institutions and professional associations representing corporate members of industry that are responsible for Swiss vocational training.



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# THE DUAL SYSTEM IN SWITZERLAND

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## MAJOR FEATURES OF THE SWISS DUAL SYSTEM

- Apprentices receive carefully structured practical training in their chosen trade in industry, and acquire theoretical knowledge in vocational school (hence ‘dual’ system).
- The apprenticeship-education programme lasts between two and four years, depending on the trade in question.
- As a rule, apprentices spend four days a week working at industry in their chosen trade and one day a week studying at vocational school.
- Apprentices are paid a small salary in recognition of the productive work done in industry while acquiring practical training in their chosen trade.
- Swiss vocational schools are run by the individual provincial governments, while the entire system of apprenticeship education is subject to the rules and regulations of both the provincial and federal governments.

- Apprentices sit a final exam, success in which earns them a federal certificate.

## TRAINING APPRENTICES MEANS MONEY WELL INVESTED

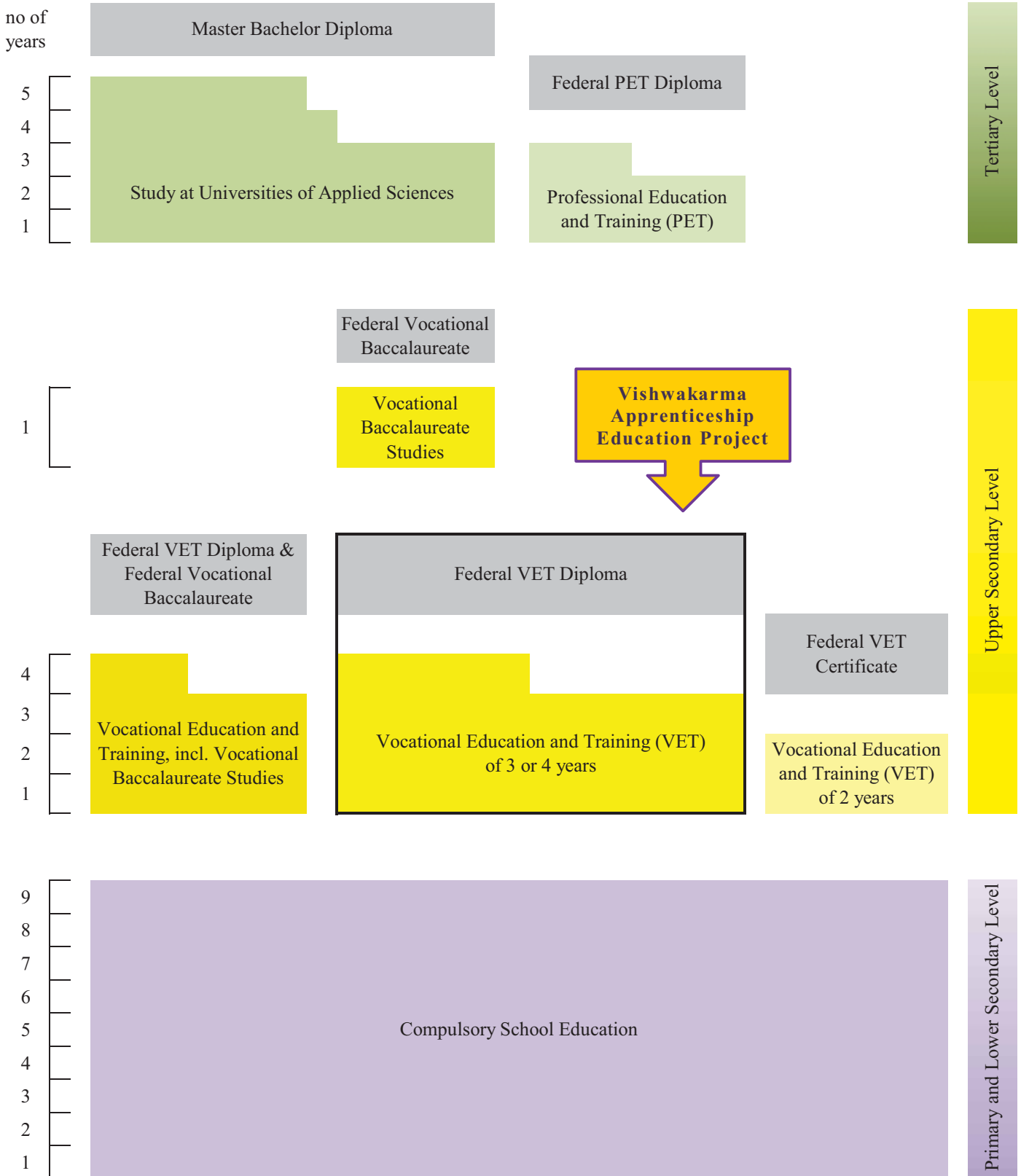
There are some 850 certified academic and non-academic occupations in Switzerland. School leavers who have completed their compulsory education have their pick of more than 200 possible trades for an apprenticeship.

More than 200 vocations are currently covered by the dual system, and they are grouped together in 22 vocational fields. This classification system primarily serves the purposes of careers advice and career selection. It enables young people to better identify where their interests and preferences lie, and focus on the vocational areas best suited to them when deciding what course of study to pursue.



In Switzerland, apprentices are valued as fully-fledged members of the work force: their contractual relationship with their employer entails mutual obligations.

# SIMPLIFIED DIAGRAM OF THE SWISS VOCATIONAL AND PROFESSIONAL EDUCATION SYSTEM



The completion of basic schooling (lower secondary level) is the prerequisite for professional training (upper secondary level). The Swiss dual system of vocational education and training (VET) comprises a practical, on-the-job component, with three to four days a week spent at a company, and a theoretical component, with one or two days a week spent studying at vocational school. Apprenticeships last a total of two to four years.

Swiss vocational schools are distinguished by the fact that their curriculum includes, in addition to subjects specific to a given trade, politics and general topics, in an effort to make responsible citizens of apprentices. In this sense, Swiss vocational school is a continuation of the public school system.

More than two thirds of all young people in Switzerland between the ages of 16 and 21 are trained in the dual system.

**SWITZERLAND:  
EDUCATIONAL ATTAINMENT AT AGE 20,  
DISTRIBUTION IN %**

Type of upper secondary education completed	Total		Men		Women	
	1996/97	2006/07	1996/97	2006/07	1996/97	2006/07
Vocational education <sup>1</sup>	65	69	74	77	57	60
Classic school-leaving certificate	18	20	17	16	19	23
Teacher training <sup>2</sup>	2	0	1	0	19	0
Education not completed <sup>3</sup>	15	11	8	7	20	17
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

<sup>1</sup> Dual system. Vocational education of two or more years' duration only. Estimate: The ratio of persons who have completed upper secondary vocational education equals the sum of the ratios of students in the second year of vocational education to the total population for each year of 16 to 21-year-olds.

<sup>2</sup> Pre-primary, primary, arts and crafts, and home-economics teachers

<sup>3</sup> Completion of one-year vocational education possible

Source: Swiss Federal Statistical Office (FSO)

Apprentices are paid for their work from the very outset of their training, which concludes the federal VET diploma with a practical and theoretical examination. VET diploma holders can then either go directly into their chosen trade, or opt for advanced studies with a broad selection of continuing educational offerings.

One specifically Swiss feature of apprenticeships – though one that is not relevant to India – is the opportunity to move almost seamlessly into a course of academic study after completing an apprenticeship, thereby enabling students to manage their careers in a highly professional way. In other words: apprentices can earn a federal vocational baccalaureate at a vocational school while they are pursuing their apprenticeship, and thus enter a university of applied sciences without sitting examinations. Alternatively, they may also choose to earn this federal vocational baccalaureate following completion of their apprenticeship in the course of a one-year programme.

Swiss apprentices are offered a broad range of continuing educational and training options when they complete their apprenticeships with the federal VET diploma. These options include:

- Professional education and training (trade supervisor diploma), or
- Further vocational education and training (with federal vocational baccalaureate), or
- Further extra-occupational education (with federal vocational baccalaureate), or
- Studies at a university of applied sciences (with master/bachelor degree), or
- Studies at an academic section of university (with PhD)



Swiss apprentices have a range of further vocational and professional education and training options once they have completed their apprenticeship.

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## SWISS VOCATIONAL CENTRES ARE SUPPORTED BY INDUSTRY

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**The success of Switzerland's dual system, anchored as it is in the nation's institutions of vocational education, is the result of an optimal collaboration among businesses offering apprenticeship programmes, vocational schools, and the authorities. As costs and time pressures mount, businesses offering apprenticeship programmes are increasingly organising common educational components to training centres, which is in turn inspiring ever more companies to share the education of their apprentices with other enterprises. These training centres enable Swiss industry to react quickly and flexibly to new vocational challenges in the various sectors of the economy, closing any gaps that open up. Thanks to good coordination among the companies concerned, these training centres adhere to learning goals that are standardised and recognised throughout Switzerland.**

**A**lthough Switzerland's first law on vocational education was passed as early as 1884, it was not until the late 1940s that Swiss vocational training truly began to blossom. Further revisions to the statutes in 1965 and 1980 made apprenticeships more attractive, and the latest version of the law, an open set of legal guidelines facilitating flexible, life-long learning, has been in force since 2004.

The dual system owes its success to its marriage of theoretical knowledge with practical, on-the-job training, with apprentices taking on productive work for the company at which they are being trained, if possible, from the very outset of their education. The apprentice's so-called master, or trade supervisor, is a skilled professional who guides the training throughout the entire programme and is charged with overseeing its objectives and its breakdown into temporal units.

### INTER INDUSTRY COURSES

The demand for basic, practical, professional training rose steadily in Switzerland beginning in the 1980s, and businesses offering ap-

prenticeship programmes were accordingly on the lookout for new educational models which would allow them to concentrate on their core competence once again while providing them with innovative pedagogical methods. At the same time, such methods had to be cost-effective, tailored to actual requirements, and high-quality.

The ideal solution turned out to be separate institutions for those courses which were of general interest to apprentices. Such courses are now offered in cooperation with the more than 400 professional associations with corporate members of industry as well as by training centres. At these centres, apprentices acquire basic practical skills and expand their expertise in sector-specific courses.

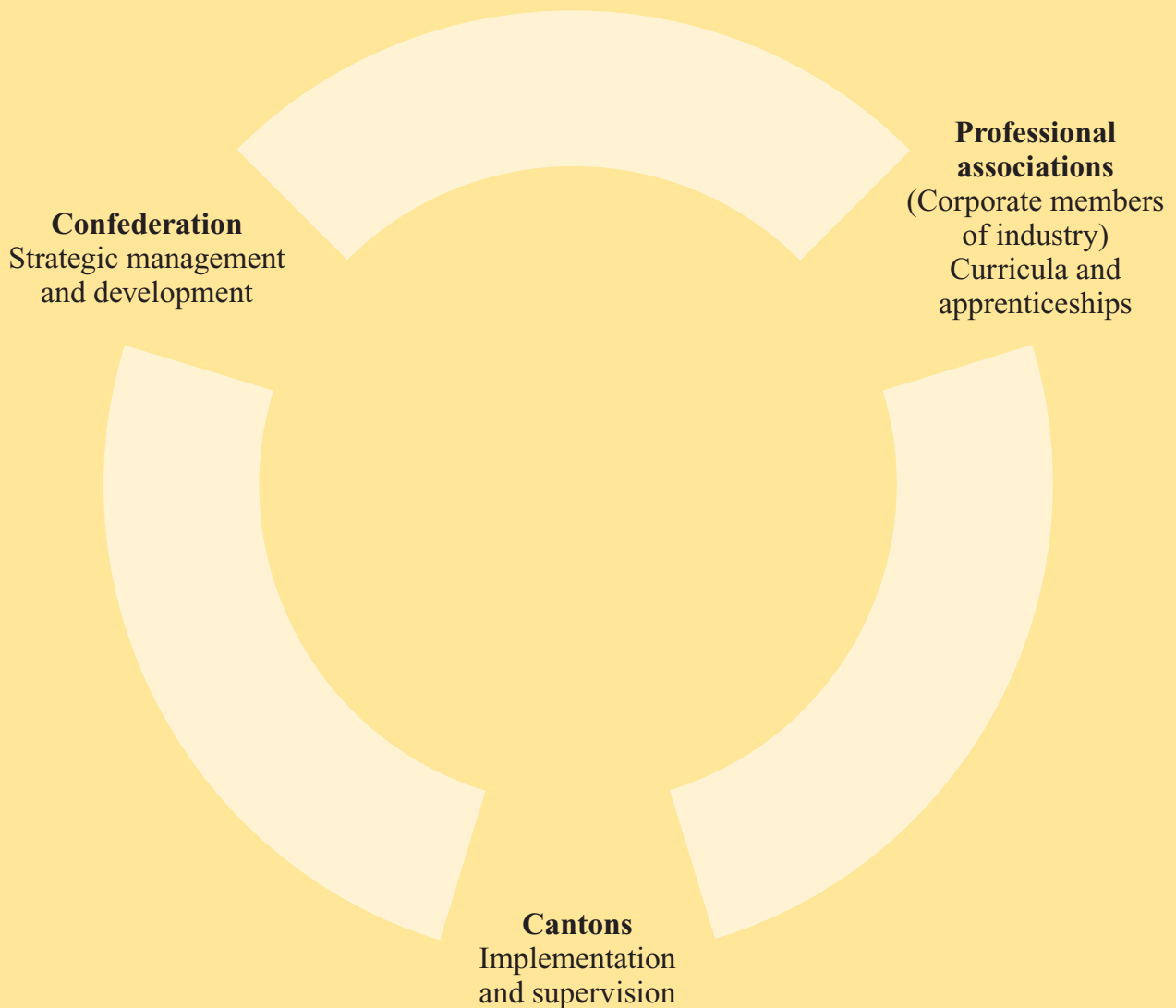
Their practical vocational education comes mainly during the first two years of their apprenticeship and concludes with an interim examination. In their third and fourth years, apprentices make a productive contribution in their chosen field at the business at which they are being trained, and are able to demonstrate their professional qualifications by means of individual project work.

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# PARTNERSHIP BETWEEN INDUSTRY, FEDERAL GOVERNMENT AND PROVINCIAL GOVERNMENT

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**The Swiss apprenticeship model depends upon the principle of partnership,  
with all relevant bodies included in its  
organisational structure.**





Throughout their entire programme, apprentices enjoy the support and guidance of a 'master', a trade supervisor and mentor in one.

SWISS TRADES:  
A SERIES  
OF PORTRAITS





Apprentices learn at an early stage to take responsibility for certain tasks.

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## EXAMPLE: PARAMEDICAL PROFESSIONS

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The dual system in the field of healthcare must be seen within the context of Switzerland's humanitarian tradition. The first nursing schools were founded some 100 years ago, and nursing as a profession was standardised by the Swiss Red Cross at the behest of the Swiss Conference of Cantonal Healthcare Directors.

The Swiss Red Cross developed a sophisticated training and continuing education system, initially guided in large part by advances in the medical profession, later by research done in the field of nursing itself. The federal government was given authority over the healthcare professions. A new development in Switzerland involves offering courses at vocational schools, as well as at universities of applied sciences.

The field of nursing and healthcare in Switzerland offers a range of attractive means to qualifying for jobs with key social importance.

### THE DUAL SYSTEM GUARANTEES A HIGH LEVEL OF SKILL IN THE FIELD OF HEALTHCARE

The range of professional degrees available in Swiss paramedical professions affords excellent career opportunities. Holders of certificates emphasise direct care, such as consulting in pain relief for cancer sufferers and their families. Candidates also acquire basic skills in systematic diagnostics. Continuing education programmes leading to a Master of Advanced Studies enable students to specialise in such areas as geriatric care.

The field of healthcare in Switzerland offers a range of attractive means to qualifying for jobs with key social importance. What is more, healthcare offerings at specialised universities allow students to pursue a degree while working in their profession.

Descriptions of the various professions in the field of paramedicine which can be learned in an apprenticeship are available on request. Examples include optometrist/optician, dental technician, healthcare technician, orthopaedist and podologist.

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## EXAMPLE: ELECTRICIAN

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In Switzerland, the common designation 'electrician' basically covers four different trades. In keeping with increasing technical sophistication, a distinction is currently made among electrical designers, power distribution electricians, electricians, and electrical installation technicians. These last are charged with commercial electrical equipment as well as with the installation, assembly, operation and maintenance of simple domestic electrical facilities, while power distribution electricians are responsible for the transport of electrical energy, and make certain that electrical power is conducted from the generator to the consumer.

### ELECTRICAL DESIGNERS PLAN HIGH AND LOW-TENSION INSTALLATIONS

Electrical designers plan, calculate and draft high and low-tension installations for residential, commercial and industrial use as well as for the public power supply. They work mainly in a design office, and their most important tool is a computer equipped with a CAD (computer-aided design) program.

Depending on the type of project they are engaged in, they may also be found on construction sites, where their investigative and surveying work is crucial for planning.

As a rule they are employed in the design department of electrical installation companies, electrical engineering offices and electricity works. Depending on their place of employ-

ment, their work may either focus on energy supply or building technology.

Among other things, electrical designers are concerned with heating and power plants, control systems, telecommunications facilities, power grids for entire subdivisions, and public lighting facilities.

Electrical designers can plan simple facilities on their own, while for more complicated systems they collaborate closely with engineers. They begin by calculating the power required by the facility in question, as well as the cables and safety features needed, which information serves the installation company in its cost assessments.

### ELECTRICAL INSTALLATION TECHNICIANS CONNECT HOUSEHOLD SOCKETS TO THE POWER GRID

Together with electricians, electrical installation technicians are responsible for domestic, agricultural and commercial electrical facilities and connections. They are involved in the design, installation and maintenance of electrical systems and equipment in industrial, commercial and domestic locations. They work using blueprint plans and electrical diagrams.

Electricians install the entire wiring system, which they then connect to electrical sockets, plugs and switches; they also connect all kinds of appliances to the electrical circuit and test their function.

Theoretical knowledge of electricity is important when it comes to repair work or maintaining goods.

The apprenticeship of electricians lasts four years. At the vocational school they receive theoretical training in the following disciplines: working technology, basic knowledge of technology, technical specifications, electrical system techniques and communication techniques.

### POWER DISTRIBUTION ELECTRICIANS ARE RESPONSIBLE FOR TRANSPORTING ELECTRICITY

Power distribution electricians are specialists working in the field of electrical engineering. They build, operate and maintain plants and devices for the transport of electricity, and ensure that electrical current is reliably delivered from generator to consumer. Power distribution electricians usually work in teams, for the most part outdoors and in all weathers. They are always aware of the dangers involved in working with electrical current, protect themselves accordingly, and must be able to rely completely on their team-mates when performing dangerous work.

The profession is subdivided into four fields: cable-laying, overhead power-line installation, sub-station construction, and public lighting.

When laying cables, power distribution electricians install the underground infrastructure required for the transportation of low and high-voltage current. They prepare the ends of cables to be joined and link these cables to sub-stations. Specialists in overhead power-line installation, for their part, erect the masts needed for overhead power-lines. Once these

masts, made of wood, steel or concrete, have been mounted with the aid of a crane, specialists in overhead power-line installation use hydraulic ramps to install the cables. Sub-station construction involves the assembly and maintenance of electricity sub-stations in which high and medium voltage are converted to the low-voltage current required. These specialists lay and link cables within and leading to sub-stations as well as to the grid. They install and renew junction boxes, replace damaged parts, and clean sub-stations. Specialists in public lighting, finally, lay and connect cables for street lights on public roads, paths and squares. They are responsible for the maintenance and repair of public-lighting facilities.

The corresponding apprenticeship lasts three years. Practical training in a power station takes place four days a week, while one day a week is spent at a vocational school studying mathematics and IT, technical drawing, physics and chemistry, material science, and electrical engineering techniques, as well as specific trade-related subjects (state laws on electricity, work processes).



The practical training of power distribution electricians includes challenging tasks undertaken in the open air.



The complementary inter industry courses offer the opportunity to learn new ways of working on same level and together with other apprentices.

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## EXAMPLE: PLUMBER

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**A**n apprenticeship in plumbing, which belongs to the vocational field of building-utilities service, lasts three years.

Plumbers furnish buildings with metal components such as roofs, gutters, façades and ornamental elements. They manufacture the parts themselves in their workshop before assembling them on a building. Templates for the production of single parts are provided by architectural plans and drawings as well as construction sketches.

Depending on the particular project, plumbers visit the construction site to survey and sketch the site of their intervention. In their workshop they make use of both manual

tools and up-to-date machinery. The manufacture of technical components for industry and trade is among their competences. They work outdoors and in all weathers. They are frequently called upon to work at great heights, on scaffoldings or rooftops. They work alone or in teams and co-ordinate their interventions with building-site management and architects.

Practical training in an industrial plumber's workshop takes place four days a week, while one day a week is spent in a vocational school studying basic physics and chemistry, thermodynamics, material science, safety on the job, construction science, metal roofs and façades, technical mathematics and technical drawing.

Plumbers work  
alone or in teams  
and co-ordinate  
their interventions  
with building-site  
management and  
architects.

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## EXAMPLE: BRICKLAYER

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**B**ricklayers work in the vocational field of building and create structures using brick, natural stone and concrete. They also install scaffoldings, lay on rough casts, and lay drain pipes.

They may specialise in either construction or civil engineering. While the former field focuses on building such things as houses, shopping centres, school complexes and industrial complexes, civil engineering involves the construction of tunnels, bridges, drain systems and public infrastructure, which last in turn comprises facilities such as sewage plants, roads and railway networks. While they are skilled in the traditional crafts (such as building dry stone walls), bricklayers also use up-to-date machinery and building methods (including the creation of concrete walls, ceilings and floors). Bricklayers also lay on rough casts and cement coats, install pre-fabricated parts like stairways and balcony balustrades, mount scaffoldings, lay drain pipes of all sizes, and perform earthwork such as channel-digging and building-pit excavation.

On the site of a new building, bricklayers work in the open, often at great heights, and also perform interior alterations and renovations. They usually work in a team. While it requires considerable physical strength, building work also calls for such mental activities as reading and interpreting blueprints, preparing a job, and procuring materials.

The apprenticeship lasts three years. Practical training takes place four days a week at a building firm, while one day a week is spent at a vocational school studying building-material science, building construction (masonry, concrete and reinforced concrete construction, civil engineering and earthwork), technical mathematics and technical drawing.

While they are skilled in the traditional crafts, bricklayers also use up-to-date machinery and building methods.



Swiss vocational schools offer both trade-related and general education, with an eye to improving apprentices' social skills, among other things.

In future, parallel to their on-the-job-training, power distribution electricians attending a vocational school in India will also study subjects like state laws on electricity and work processes.



# THE CURRENT SITUATION IN INDIA



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## AN ASSESSMENT OF THE PRESENT SITUATION WITH A VIEW TO THE FUTURE

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A final draft of the 2008 National Policy on Skills Development was issued by India's Ministry of Labour and Employment in conjunction with the ILO Subregional Office for South Asia (SRO-New Delhi) on 4 May 2008.

Although the Indian economy has posted remarkable growth in recent years, as domestic industry expands and becomes ever more competitive on the international level it is increasingly constrained by the limited availability of the requisite skilled labour in the necessary quality. This is a major challenge, since, as has been noted at the highest levels, sustaining a high level of economic growth depends essentially upon a skilled, properly trained workforce.

Skills and knowledge are the driving forces of economic growth and social development in any country, and countries with higher and better levels of skill adjust more effectively to the challenges and opportunities of globalisation. Shortages have already emerged in a number of sectors. Large-scale skills development is thus imperative for India, and the creation of a National Skills Development Mission has accordingly been announced.

There is a growing sense that past strategies of skills development are inadequate to the hurdles faced by today's economy; the Task Force consequently calls for a paradigm shift in the national policy on skills development.

The challenge is not merely to produce the additional skilled labour required by the eco-

nomy, but also to ensure that skills-development initiatives address the needs of India's enormous population as well, by making them employable and helping them to secure 'decent work'. Translating the benefits of a high rate of economic growth into a faster pace of poverty reduction by generating productive employment, in other words, remains a formidable task, in which the development of skilled personnel in the informal sector is a key strategic step.

Planned development of skills must be underpinned by a policy which is both comprehensive and national. Piecemeal policies, as well as those which do not accommodate or reconcile the perceptions of various stakeholders across the country, cannot effectively serve the goals of national development. A national policy is needed to guide the formulation of skills-development strategies and the planning of coordinated action by all partners concerned. Furthermore, in view of the interconnections among employment, economic growth and skills, it is important that policies in the area of skills development be linked to policies in the economic, employment and social-development spheres.

India is poised to create a much brighter future for all of its people, and skills development will help achieve this goal. The development and articulation of a national policy on skills development is thus a matter of prime importance.

The challenges in skills development are many. They include:

- building a system with sufficient capacity;
- ensuring equitable access to all, in particular women, the young, disadvantaged communities, minorities, the poor, the disabled, dropouts, and those working in the informal sector;
- reducing the mismatch between supply and demand on the skills market;
- diversifying skills-development programmes to meet changing requirements, particularly as posed by the emerging knowledge economy;
- ensuring the quality and relevance of training;
- creating true market competence rather than mere qualifications;
- providing opportunities for life-long skills development;
- promoting greater, more active involvement on the part of the social partners and forging a strong and symbiotic public-private partnership for skills development;
- establishing institutional arrangements for planning, quality assurance, and the involvement of stakeholders, as well as for the coordination of skills development across the country;
- fashioning governance for the skills-development system which promotes initiative, excellence, innovation, autonomy and participation while ensuring that the legitimate interests of all beneficiaries are respected;
- strengthening the physical and intellectual resources available to the skills-development system; and
- mobilising adequate investments for the sustainable financing of skills development.

## VISION OF THE NATIONAL SKILLS DEVELOPMENT SYSTEM IN INDIA

The vision shared by India's Ministry of Labour and Employment and the ILO Subregional Office for South Asia (SRO-New Delhi) makes significant social demands in addition to clearly expressing a sense of mission:

**“National Skills Development System is aimed at empowering all individuals through improved skills, knowledge and internationally recognised qualifications to enable access to decent employment and promote inclusive growth and ensure India's competitiveness in the global market.”**

The project for a Swiss-style dual system of vocational apprenticeship education and training in India, as promoted by the JCF, in addition to largely meeting the demands of this mission, also joins the National Policy of Skills Development 2008 in calling for a skills-development system which

*... supports employment generation, economic growth and social development processes;*

*... champions diversity while maintaining a nationally coherent skills-development system based on strong public-private partnerships;*

*... responds to technological change, employment requirements, and improvements in the productivity and competitiveness of industry;*

*... aims to achieve inclusive growth by providing equal access to training for all, and responds to the needs of the informal sector;*

*... grants qualifications and certificates which are quality-assured and recognised, nationally, by a range of organisations, as well as internationally;*

*... promotes lifelong learning and the continuous upgrading of skills and knowledge;*

*... is supported by sustainable funding; and*

*... promotes excellence and meets the changing needs of a knowledge economy.*

<sup>2</sup>The complete wording of the NATIONAL POLICY ON SKILLS DEVELOPMENT 2008 (Draft for Consideration), prepared by India's Ministry of Labour and Employment and the ILO Subregional Office for Southern Asia (SRO-New Delhi) can be found at [http://dget.nic.in/publications/NATIONAL\\_Skills\\_POLICY\\_FINAL.pdf](http://dget.nic.in/publications/NATIONAL_Skills_POLICY_FINAL.pdf)

## THE FUNDAMENTS FOR THE ESTABLISHMENT OF A DUAL SYSTEM ARE AVAILABLE

The project conforms to the Indian Ministry of Labour and Employment's Trade Apprenticeship Training in India (as on 31.3.2004). The Apprenticeship Training Scheme of March 2007 notes that the Indian educational system already comprises a form of apprenticeship. It also points out that, despite intake capacity of 246,137 in 32,413 establishments, a total of only 168,821 apprentices were on the rolls of 20,900 establishments in the year under review. In the state/private sector, meanwhile, there was an 11 percent rise over 2006 in the number of establishments with training facilities. The most popular trades amongst apprentices were fitter, with 34,046 apprentices, electrician, with 22,047, and motor-vehicle mechanic, with 12,508.

The Apprentices Act of 1961 was enacted with the following objectives:

- To regulate apprentice-training programmes in industry so as to conform to prescribed syllabi, period of training etc., as laid down by the Central Apprenticeship Council; and
- To utilise fully the facilities available in industry for imparting practical training with a view to meeting the requirements of skilled labour for industry.

All India Trade Tests (AITTs) for trade apprentices are conducted twice a year by the National Council of Vocational Training (NCVT), which also awards National Apprenticeship Certificates (NACs) to successful candidates. NACs are recognised for employment in all establishments, undertakings, and autonomous organisations under

the central and state governments, as well as by establishments in the private sector.

The current monthly stipend during apprenticeship training varies between 80 rupees in the first year of training and 1,230 rupees in the fourth year.

The apprenticeship system currently in place under India's Apprentices Act provides a good basis for the introduction of a Swiss-style dual system, to which it offers not the slightest competition.

The big difference between the kind of apprenticeship usually provided in India and the training principle established in Switzerland lies in the dual system, which supplies apprentices with theoretical knowledge to complement their practical work.

On the contrary, India's solid tradition will serve to efficiently leverage Swiss know-how with an eye to successfully optimising the Indian apprenticeship system for the future. As a result, Indian industry will have a ready supply of well trained new staff for the future, while the dual system will open up a range of completely new prospects for talented young people from financially weak sectors of the population.

“National Skills Development System is aimed at empowering all individuals through improved skills, knowledge and internationally recognised qualifications ...”



The increasing demand for quality on Indian construction sites calls for beam-casting specialists with a solid base in both theory and practice – a need met by the dual system.

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# THE DUAL SYSTEM: THE KEY TO EQUAL OPPORTUNITY FOR YOUNG INDIANS

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**The Indian education system takes it for granted that young people from certain social classes will go away empty-handed. The fact that social background plays a more decisive role than scholastic achievement in the careers of Indian youth is a matter for particularly drastic concern.**

**An Indian's career opportunities stand in direct proportion to his or her parents' educational level and their social status. With its Apprenticeship Education Project, the JCF offers knowledge transfer for an effective remedy to this economic and social dysfunction.**

In a globalised world, the prosperity and economic competitiveness of our nation, the expansion of its systems of social security, and its very future depend increasingly upon the educational level of its population. Globalisation and India's accelerating demographic evolution pose new challenges for our educators, for our school system, and for our entire society.

Education has become the most salient factor in determining individual viability in today's knowledge culture. Qualified professional training is guided by values tested in specialised pedagogical laboratories in accordance with scientific criteria in its pursuit of a high level of professionalism. Solid vocational education depends on a holistic methodology, one which takes the individual's entire personality into account as it focuses on the apprentice, with all of his or her strengths and weaknesses, and thus ensures that citizens enjoy equal opportunity in Indian society and a participating role in its democratic political life.

## AN OBLIGATION TO DEAL WITH THE WEAKNESSES OF THE INDIAN VOCATIONAL EDUCATION SYSTEM AT THE UPPER SECONDARY LEVEL

- Every year, 5.5 million students finish class X; of these, 3.3 million continue studying, while 2.2 million drop out of the education system altogether.<sup>3</sup>
- In addition, 19 million students drop out after class VIII every year, in search of vocational training and/or self-employment.<sup>4</sup>

India's official training capacity for apprentices, however, is merely 2.3 million, which means that 18.9 million<sup>5</sup> would-be students cannot be accommodated each year. If the aim is to reach a target group of about 20 million, therefore, India's system of industrial training institutes (ITIs) must either be revamped, or replaced with a new model.

<sup>3/4</sup> Tenth Five Year Plan 2002–2007, Planning Commission, Government of India, New Delhi, Vol. II (Chapter II: Human and Social Development)

<sup>5</sup>  $2.2 + 19 - 2.3 = 18.9m$

## STRATEGIES FOR THE IMPROVEMENT OF INDIAN EDUCATION

The Rajendra & Ursula Joshi Charitable Foundation (JCF) proposes the following solutions to the problem:

- Introduce a Swiss-style dual system of apprenticeship education, which would allow young people to get vocational education and training with no financial obligation on their parents' part;
- Allow students who have dropped out of the education system after class X and later students who passed class VIII (2.2 million and 19 million, respectively) to enrol in an apprenticeship programme;
- Reform existing vocational education to combine practical, on-the-job training at a participating company with theoretical education acquired at a vocational school, and thus stress the training of apprentices as the joint responsibility of trade associations, industries, and both state and central government;
- Involve trade associations and industry more closely in the apprenticeship system.

## ALL YOUNG PEOPLE ARE ENTITLED TO VOCATIONAL EDUCATION AND TRAINING

In a long-term view it is of paramount importance that both India's private sector and its public sector meet their obligations to provide ample training of sufficient quality and within reasonable distance from their place of residence for all those who desire an education and are capable of embarking on a professional career, and thus build a viable future for India. An apprenticeship programme offering training in a range of trades must be established, in a further stage, and made compulsory in standardised form in all of India's federal states.

### THE DUAL SYSTEM MUST PLAY A CENTRAL ROLE IN INDIA'S PROFESSIONAL EDUCATION SYSTEM

From the inception of the project in the early 20th century, the German-speaking world today has developed a dual system of vocational education and training, based on sound pedagogical authority, scientific principle, a high degree of professionalism, and the conceptual combination of theory and practice. We want to transfer this model to India.

The dual system draws its strength from its guarantee of high standards in professional education based on a public-private partnership. By regulating the collaboration of companies with apprenticeship programmes and vocational schools, the system delivers the professionally qualified labour required by the private sector as it tackles a range of new challenges. Experience has shown that such collaboration leads to high-quality output.

Vocational schools must be located and organised in such a way as to guarantee that the most comprehensive possible training is accessible for all apprentices. Unlike Switzerland, which is geographically compact and where distances between home, workplace and vocational school are generally very short, in India large distances are involved – a problem which is to be solved by the provision of hostel facilities in the vocational schools. This is of particular significance to India's rural population, for whom the government's stance on professional training amounts to social policy.

A standardised basis for the attainment of professional certification with nation-wide validity is crucial to increased job-market mobility. Qualifying final exams for entrance into the professional world must be standardised and made compulsory in all Indian states. We will call upon experts from Swiss vocational schools to help with the successful implementation of this plan.

The professional fields which will serve as an organisational principle for the Indian dual system must be clearly defined at the outset, and the requisite educational content must in turn be definitively determined by the relevant professional committees and commissions. The JCF will lend its unequivocal support to this process, with an eye to ensuring inclusion of the Indian dimension in the various curricula.

Furthermore, the educational regulations and master plans of the individual vocational centres must also be standardised. Companies with apprenticeship programmes and vocational schools must be given sufficient time between the establishment of new educational regulations and the inception of professional training to adapt their respective educational arrangements to regional requirements.

## REMAKING PROFESSIONAL TRAINING AND CONTINUING EDUCATION

The growing demands on professionals make the harmonisation of basic schooling and professional training and continuing education imperative. Over the long term, apprenticeship programmes must be understood as part of the process of continuing education.

Apprentices will need to acquire skills which are not limited to specialist areas, but are applicable to general work and corporate processes as well. The long-term institutionalisation of continuing education calls for the development of professional training and education into a modular system guided both by professional principle and by the academic demand for interdisciplinarity.

## DEVELOPING VOCATIONAL SCHOOLS INTO REGIONAL COMPETENCE CENTRES

As autonomous pedagogical organisations with the status of incorporated enterprises, the vocational schools must be developed into regional competence centres for the various fields of basic professional training. They must be granted the requisite authority and the infrastructure necessary to coordinate regional professional training and continuing education. The development of vocational schools into competence centres must also be supported if possible by regional professional networks.

## ENHANCING THE AUTONOMY OF VOCATIONAL SCHOOLS

Under this system, autonomous schools meet objectives determined in advance and included in their own training programmes. They are granted the means necessary for this undertaking, and are thus flexible in the design of their educational programmes, the equipment of their facilities, and the creation of their own operational structures, as well as being responsible for the social consequences of their performance. The aim of all of these measures is the provision of a sound education for the inhabitants of each region.

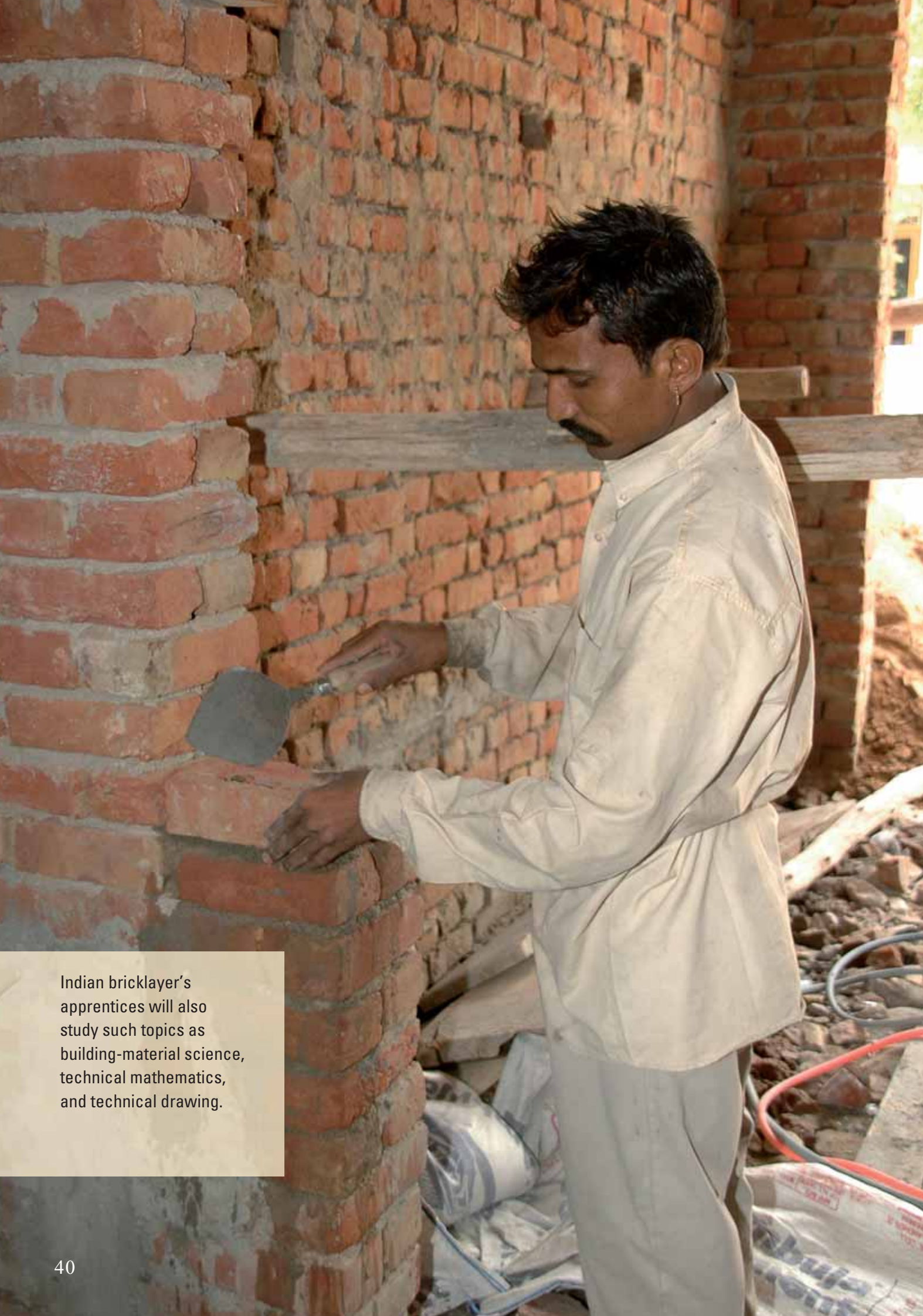
## CONTINUOUS ADAPTATION OF CURRICULA

India's economic development, the rapid spread of information and telecommunications technology, and decentralised organisational structures and precepts, such as customer-friendliness and the implementation of business processes, all call for the reform of traditional Indian trades. These factors exert an influence on the structure and content of the curricula to be offered at future vocational centres; at the same time, working conditions and routines at the companies offering apprenticeship programmes must also be adapted to changing requirements. Over the long term, meanwhile, new opportunities for the acquirement of supplementary qualifications following completion of an apprenticeship programme must also be created, guided first and foremost by the need to make educational offerings accessible to all, as well as by the ability to adapt continuing-education curricula quickly and with a minimum of red tape.

The JCF will lend its unequivocal support to this process, with an eye to ensuring inclusion of the Indian dimension in the various curricula.

# ADAPTING THE SWISS DUAL SYSTEM TO INDIAN CONDITIONS





Indian bricklayer's apprentices will also study such topics as building-material science, technical mathematics, and technical drawing.

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# CURRENT RECOMMENDATIONS FOR ADAPTING THE SWISS DUAL SYSTEM TO INDIAN CONDITIONS

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Adapting the Swiss dual system to the political, economic and social realities of India will require considerable cultural competence.

We suggest the following modified system:

- Apprentices receive carefully structured practical training in their chosen trade while acquiring theoretical knowledge at vocational school;
  - Eligibility for entrance should be successful completion of class X, and later class VIII;
  - The programme's duration must be reduced to two years instead of three or four. Nevertheless the full educational content will be maintained as is, so that the amendment to scheduling does not impinge on the level of study;
  - The whole apprenticeship will be split in around 20 cycles of four weeks with three weeks spent in the industry (two weeks' productivity and one week for training) and one week at a vocational school. The advantages of cyclical operation of the school programme are as follows:
    - Optimal use of training capacity, thereby reducing operating costs;
    - Resolution of logistical problems by offering a good infrastructure with an in-house hostel for the apprentices.
- Swiss standard job descriptions are to be amended to Indian requirements;
  - Language of study is to be Hindi, with all study material to be translated from German;
  - Fees for vocational schools are to be jointly decided by the partners;
  - Apprentices' salaries are to be decided in public-private partnership;
  - After successfully passing the exams, apprentices are to be awarded a certificate specifying their skills in their chosen trade by the state human-resources department, and subsequently by the central human-resources department.

ces. This will enable a large catchment area to be covered;

## RESPONSIBILITIES OF THE JCF

The allocation of rights and responsibilities between the JCF and the companies offering apprenticeship schemes will be determined during friendly consultations. The contributions offered by the JCF include, among others, the following services:

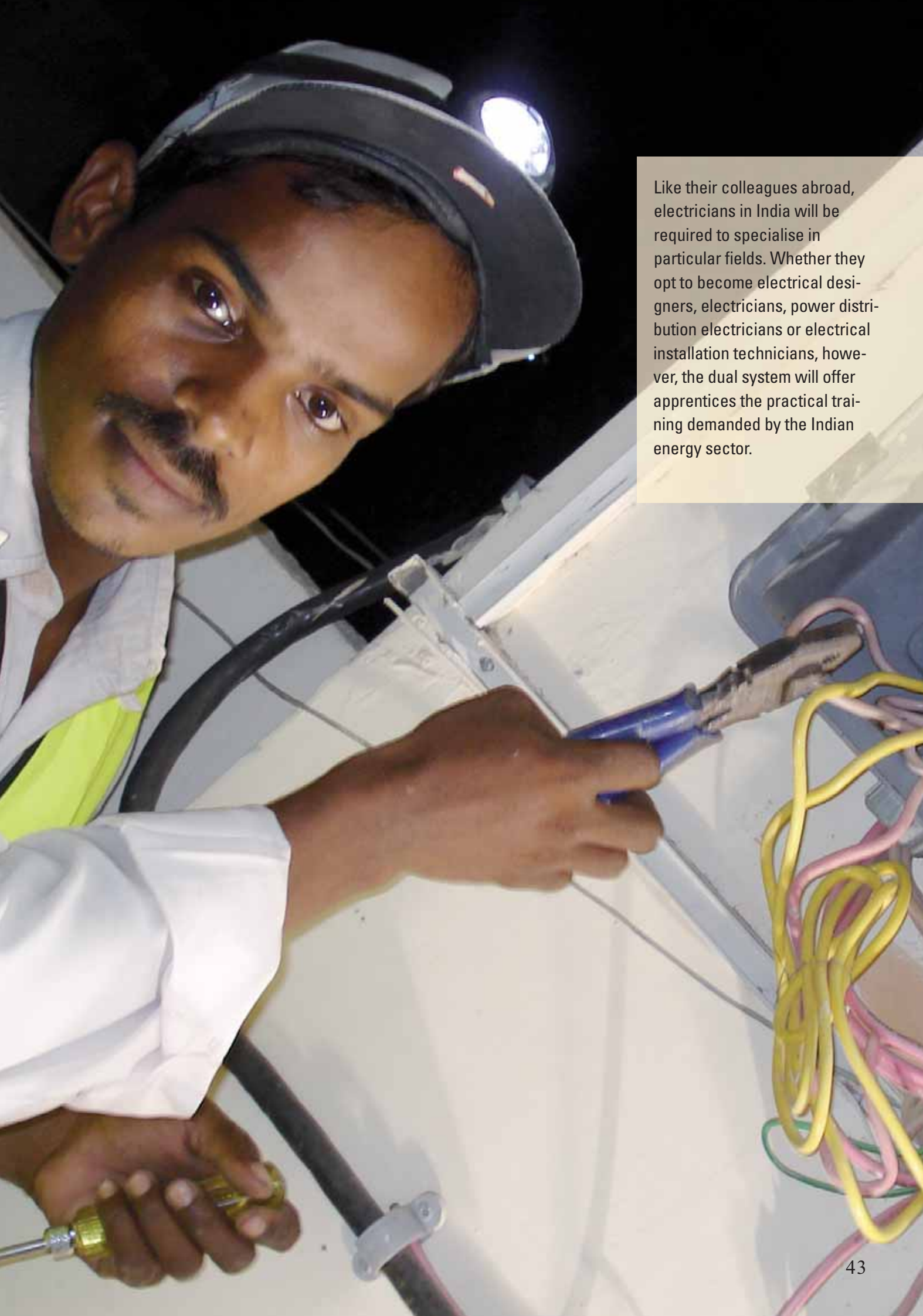
- Coordination of project implementation
- Provision of curriculum and trade syllabus
- Listing of teaching material needed for vocational education
- English adaptation followed by Hindi translation of Swiss guidelines
  - Complete curriculum
  - Detailed syllabus
  - Teaching material
  - Regulations for examinations and certification
  - Complete set of regulations
- Definition of qualifications for vocational teachers of trade-related and general knowledge, as well as for trade supervisors. The success of the Swiss dual system in India and the maximisation of its benefits to apprentices will depend upon proper coordination of the practical and theoretical components of each programme.

■ ‘Train-the-trainer’ programme of one to two months in Switzerland for the selected Indian vocational teachers designated for trade-related education as well as for the trade supervisors. This training consists of:

- Travel from and to India for eight persons
- Familiarisation with the Swiss dual system of apprenticeship
- Visits to vocational schools and/or the industry involved
- Coordination of practical and theoretical components of the knowledge transfer

■ Supply of all the necessary information and documentation to build up and/or implement the Swiss dual system in India.

Adapting the Swiss dual system to the political, economic and social realities of India will require considerable cultural competence.



Like their colleagues abroad, electricians in India will be required to specialise in particular fields. Whether they opt to become electrical designers, electricians, power distribution electricians or electrical installation technicians, however, the dual system will offer apprentices the practical training demanded by the Indian energy sector.



India's booming IT industry is increasingly in need of qualified specialists with practical skills, and the dual system will provide a range of apprenticeships to satisfy this demand.

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# BENEFITS OF THE DUAL SYSTEM IN INDIA

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**Experience in Switzerland has shown that the dual system is quantifiably beneficial at a range of levels. All of the social partners – apprentices, the private sector and the public sector, and thus society as a whole – stand to benefit.**

**Apprentices in Switzerland, regardless of their particular trade, make modest contributions to the productivity of their employer as early as in their third year of apprenticeship. A Swiss carpenter's apprentice, for example, produces the equivalent of 34,500 Swiss francs a year, as compared with 16,000 Swiss francs in training costs.**

## **BENEFITS FOR INDUSTRY: QUALITY AND FLEXIBILITY**

The dual system allows companies to offer their apprentices more than just specialised techniques. To some extent, apprenticeships also teach life skills, and enhance the social competence of their participants. Apprentices are taught from the outset how to accept responsibility, as well as how to work in a team. They learn how to deal constructively with human problems on the job, among other things. And, by quickly identifying with their company, they also serve as its ambassadors.

By committing themselves to the training of apprentices according to the dual-system model, Indian companies make a signal contribution to the future of their sector. Today's apprentices are tomorrow's colleagues and successors, their theoretical knowledge underpinned by solid practical experience in their chosen trade. An apprenticeship programme thus serves as a bridge between the unskilled worker and the highly specialised expert.

## **BENEFITS FOR YOUNG PEOPLE: ACCESS FOR ALL SOCIAL CLASSES**

Young people derive both social and economic benefits from the dual system, which offers vocational education and training to talented young people regardless of their social class. The apprenticeship system turns young people who are eager to learn into qualified professionals, and provides career opportunities to anyone who has successfully completed an apprenticeship.

## **BENEFITS FOR SOCIETY: LESS YOUTH UNEMPLOYMENT**

The introduction of the dual system is among the most effective ways to combat youth unemployment. In most cases, an apprentice's relatively modest income is enough to live on, which makes for an early acquaintance with self-sufficiency. Finally, the additional large number of jobs created by the dual system will also help to stem the tide of juvenile delinquency.



The paramedical sector in India also offers young women a broad spectrum of apprenticeships in challenging trades.

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## STATEMENTS BY THE SOCIAL PARTNERS

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### FROM INDIA'S PRIVATE SECTOR

*"We appreciate the Joshi Charitable Foundation's call for a Swiss dual system of apprenticeship education in India. It has the considerable virtue of offering the next generation in our business real practical experience. It marries theory and practice as well as training professionals to deploy their skills strategically for development of Rajasthan's infrastructure."*

Shreemat Pandey, Chairman & Managing Director of Rajasthan Rajya Vidyut Prsaran Nigam Ltd., Jaipur

*"At last: an initiative advocated by an institution capable of 'customising' the high vocational standards of the industrialised west to India's specific political, economic and social needs, with relevant skills and cultural sensitivity. We support the Rajendra & Ursula Joshi Charitable Foundation in realising their dream of dual system project."*

Dr. Raghupati Singhania, Vice Chairman & Managing Director of JK Tyre & Industries Ltd., Bahadur Shah Zafar Marg, New Delhi

*"We believe the Swiss dual system represents the best way to modernise Indian vocational education and training. It will help us successfully meet the economic and social de-*

*mands made on the private sector. We identify with the Joshi Charitable Foundation's aims and plan to offer the project our full support."*

Sushil Kumar Thirani, Chairman of Kores (India) Ltd., Kores House, Worli, Mumbai

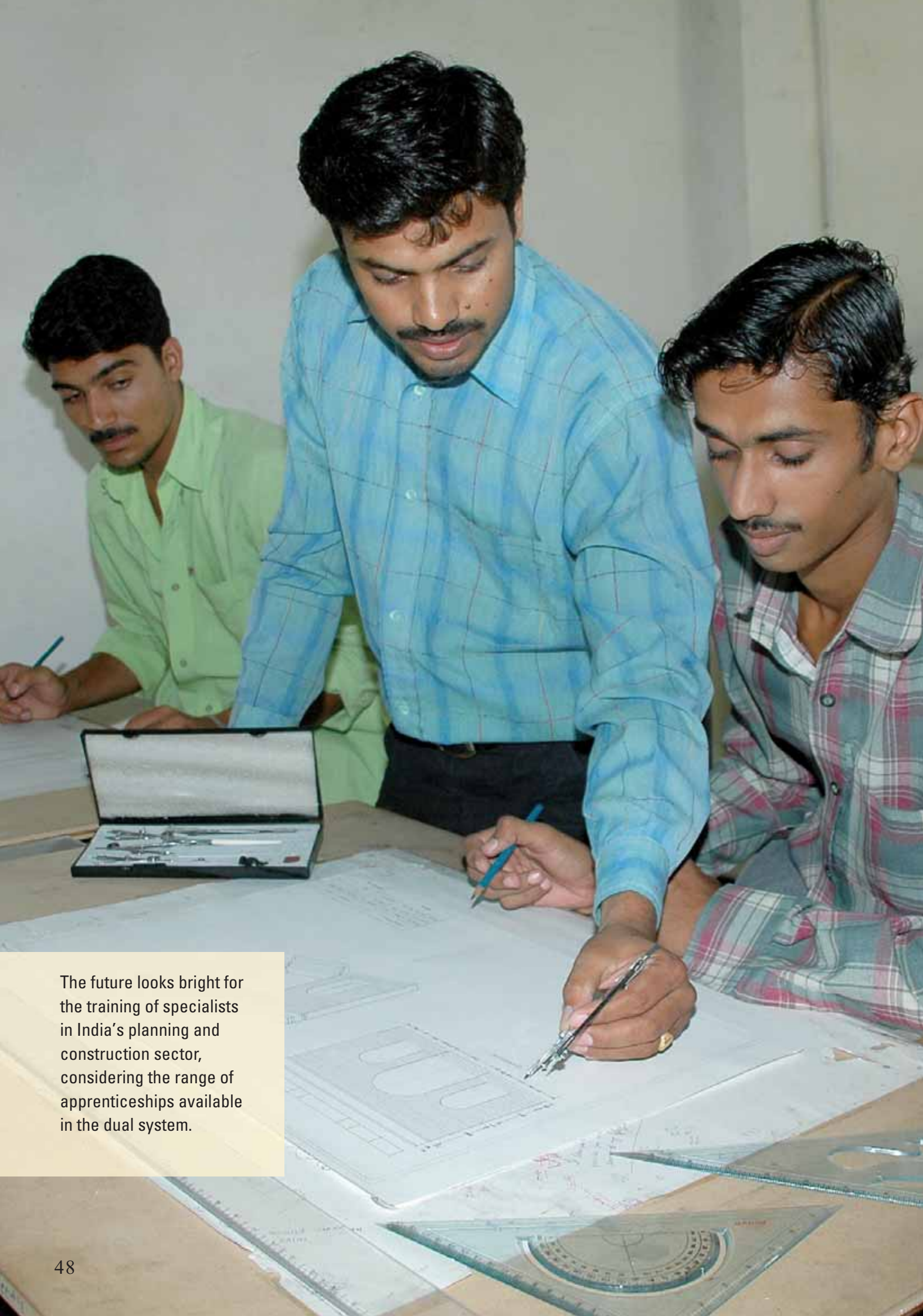
### FROM INDIA'S YOUNG PEOPLE

*"I was really taken with the dual system that was presented to us in school. The chance to attend a vocational school and earn some money at the same time – what more could anyone ask for?"*

Kavita Dautania, 16, Class X, Govt. Sec. School, Hassanpura, Jaipur

*"I will soon complete class XII. Since I come from a financially weak family, however, I thought I would never be able to acquire professional training. Now, thanks to the dual system, I have a completely new outlook. With my apprentice's salary I will be able to feed myself and pursue my studies, day in and day out."*

Buddhi Prakash, 18, Class XII, Smt. Kamla Devi Govt. Hr. Sec. School, Heerapura, Jaipur



The future looks bright for the training of specialists in India's planning and construction sector, considering the range of apprenticeships available in the dual system.

*“I think the dual system model for apprenticeships that we heard about in school is fascinating. In my view. Combining theory and practice is an excellent way to gain a better understanding of what we learned in the vocational school by putting it into practice at work.”*

Vikas Pathan, 14, Class VIII, Govt. Sr. Sec. School, Mansarovar, Jaipur

FROM THE SWISS FEDERAL  
OFFICE FOR PROFESSIONAL  
EDUCATION AND TECHNOLOGY  
(OPET)

*Some 150 Swiss businesses employ around 41,000 people throughout India. For this reason, both states have an interest in the vigorous promotion of professional education. As we look to expand our friendly relationship further in the years ahead, we at OPET and Swiss industry are naturally delighted to offer India the benefit of more than a century’s practical experience in designing apprenticeships using the dual system.*

Dr. Ursula Renold, Director, Federal Office for Professional Education and Technology (OPET), Berne

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# IMPLEMENTATION OF THE DUAL SYSTEM IN INDIA

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The JCF believes the way is clear for introducing a Swiss-style dual system by means of efficient knowledge transfer from Switzerland to India.

The timeframe set out below relates to the implementation of the dual system for a range of vocational apprenticeships. In line with demand, individual apprenticeships will be established one after the other – prioritised by vocational field – and introduced simultaneously.

## *Short term*

1. Convince Indian industry of the present project
2. Search for a partner and also discuss the trades to be targeted as well as the rights and responsibilities to be laid down in a agreement
3. Introduction of a schedule
4. Assessment of four trade supervisors and four vocational teachers

## *Medium term*

5. Train-the-trainer programme for supervisors and vocational teachers in Switzerland. Simultaneous set-up of apprenticeships in India
6. The four selected trade supervisors and vocational teachers collect and evaluate teaching materials suitable for India as well as selecting the resources required. Collecting of teaching equipment
7. Opening of the first vocational schools
8. Start of the apprenticeship. The JCF simultaneously contacts the federal government (Human Resources Department) to decide on the standard of certificates

## *Medium to long term*

9. Following a two-year implementation phase: full responsibility for the project is handed over by the JCF to the Indian partner
10. Performance assessment and corrections to the programme where necessary
11. Expansion of the dual system to cover additional vocational areas



India's paramedical industry provides ambitious young people with on-the-job training in a variety of trades.

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# CONTACT ADDRESSES

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## **In India**

### **JES**

Rajendra & Ursula Joshi Educational Society  
510, Anchor Mall  
Near Ajmer Pulia  
Ajmer Road  
Jaipur – 302006

phone & fax +91 141 401 2763

E-mail [email2jes@joshi-foundation.ch](mailto:email2jes@joshi-foundation.ch)

## **In Switzerland**

### **JCF**

Rajendra & Ursula Joshi Charitable Foundation  
Albisriederstrasse 315  
8047 Zurich

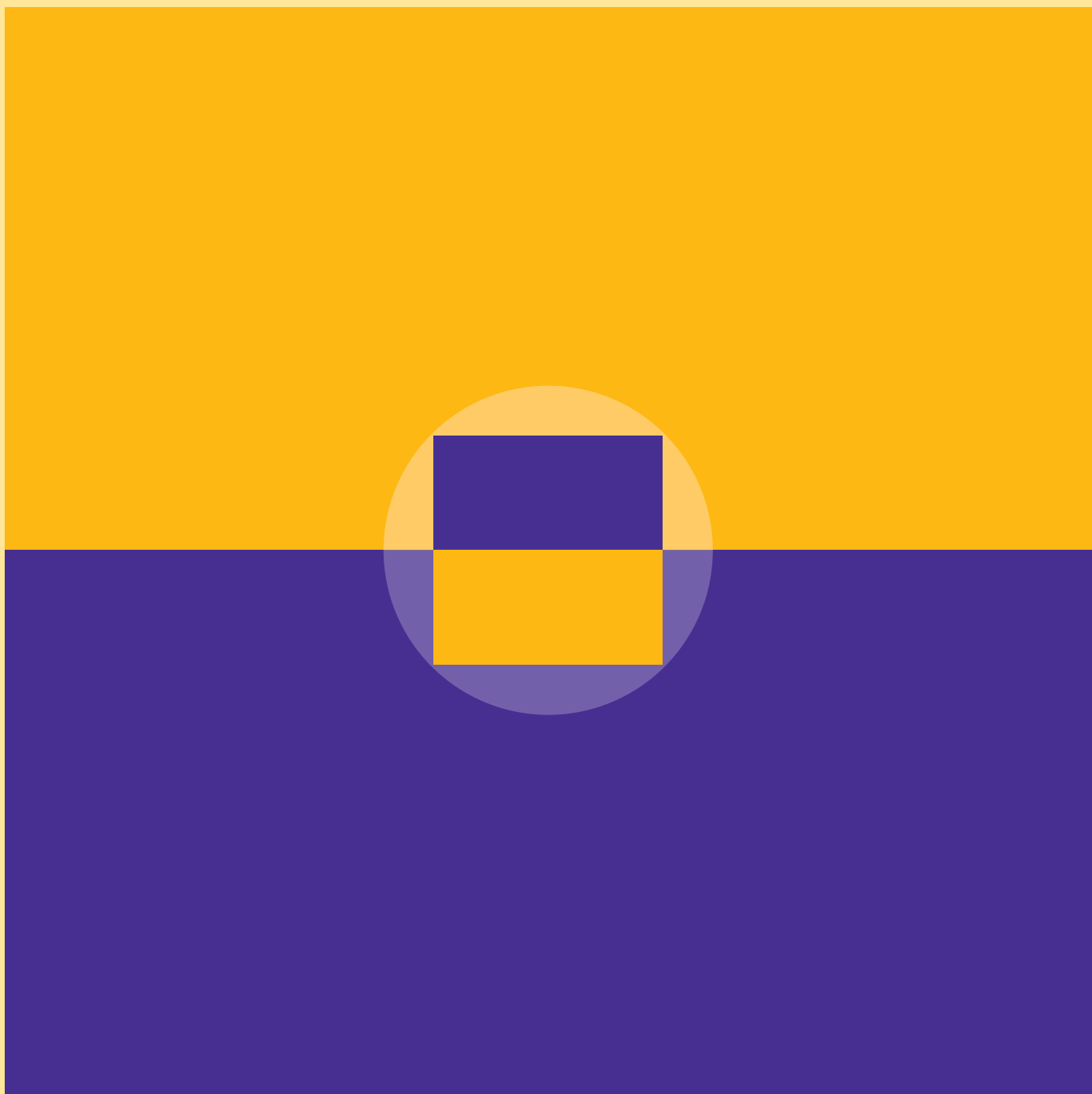
phone +41 43 311 15 30

fax +41 43 311 15 31

mail [contact@joshi-foundation.ch](mailto:contact@joshi-foundation.ch)

**[www.joshi-foundation.ch](http://www.joshi-foundation.ch)**





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