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Book

The KOF education system factbook: India

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KOF Swiss Economic Institute

The KOF Education System Factbook: India

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KOF

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List of Abbreviations

AICTE	All India Council for Technical Education
CTS	Craftsmen Training Scheme
DGET	Directorate General of Employment and Training
DIET	District Institutes of Education and Training
ECCE	Early Childhood Care and Education
FICCI	Federation of Indian Chambers of Commerce and Industry
FPP	First-Past-the-Post
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GII	Global Innovation Index
ICDS	Integrated Child Development Services
ILO	International Labour Organization
ISCD	International Standard Classification of Education
ISCED	International Standard Classification of Education
KOF	Swiss Economic Institute
MHRD	Ministry of Human Resources and Development
MoLE	Ministry of Labour and Employment
NCERT	National Council for Education Research and Training
NCTE	National Council of Teacher Education
NIC	Newly Industrialized Countries
NLM	National Literacy Mission
NLMA	National Mission Authority
NPE	National Policy on Education
NSDA	National Skills Development Agency
NSDC	National Skills Development Corporation
OECD	Organisation for Economic Co-operation and Development
PET	Professional Education and Training
SBP	Saakshar Bharat Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization

VET	Vocational Education and Training
VPET	Vocational Professional Education and Training
VPETA	Vocational and Professional Education and Training Act
WEF	World Economic Forum
YLMI	Youth Labour Market Index

FOREWORD

The increasing competitiveness of the world economy as well as the high youth unemployment rates after the worldwide economic crises have put pressure on countries to upgrade the skills of their workforces. Consequently, vocational education and training (VET) has received growing attention in recent years, especially amongst policy-makers. For example, the European Commission defined common objectives and an action plan for the development of VET systems in European countries in the *Bruges Communiqué on Enhanced European Cooperation in Vocational Education and Training for 2011-2020* (European Commission, 2010). In addition, a growing number of US states and other industrialized, transition, and developing countries (for example Hong Kong, Singapore, Chile, Costa Rica, Benin and Nepal) are interested in either implementing VET systems or making their VET system more labor-market oriented.

The appealing outcome of the VET system is that it improves the transition of young people into the labor market by simultaneously providing work experience, remuneration and formal education degrees at the secondary education level. If the VET system is optimally designed, VET providers are in constant dialogue with the demand-side of the labor market, i.e. the companies. This close relationship guarantees that the learned skills are in demand on the labor market. Besides practical skills, VET systems also foster soft-skills such as emotional intelligence, reliability, accuracy, precision, and responsibility, which are important attributes for success in the labor market. Depending on the design and permeability of the education system, VET may also provide access to tertiary level education (according to the ISCED classification): either general education at the tertiary A level or professional education and training (PET) at the tertiary B level. PET provides occupation-specific qualifications that prepare students for highly technical and managerial positions. VET and PET systems are often referred to together as “vocational and professional education training (VPET)” systems.

Few countries have elaborate and efficient VPET systems. Among these is the Swiss VPET system, which is an example of an education system that successfully matches market supply and demand. The Swiss VPET system efficiently introduces adolescents to the labor market, as shown by Switzerland’s 2007-2017 average youth unemployment rate of 8.1 percent compared to 14.8 percent for the OECD average (OECD, 2017).

Though not many countries have VPET systems that are comparable to Switzerland’s in terms of quality, efficiency and permeability, many have education pathways that involve some kind of practical or school-based vocational education. The purpose of the KOF Education System Factbook Series is to provide information about the education systems of countries across the world, with a special focus on vocational and professional education and training.

In the KOF Education System Factbook: India, we describe India's vocational system and discuss the characteristics that are crucial to the functioning of the system. Essential components comprise the regulatory framework and the governance of the VPET system, the involved actors, and their competencies and duties. The Factbook also provides information regarding the financing of the system and describes the process of curriculum development and the involved actors.

The Factbook is structured as follows: First, we provide an overview of India's economy, labor market, and political system. The second part is dedicated to the description of the formal education system. The third section explains India's vocational education system. The last section offers a perspective on India's recent education reforms and challenges to be faced in the future.

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The KOF Education System Factbooks is work in progress. The authors do not claim completeness of the information, which has been collected carefully and in all conscience. Any suggestions for improvement are highly welcome!

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1. The Indian Economy and its Political System

One of the main purposes of an education system is to provide the future workforce with the skills needed in the labor market. The particularities of a country's economy and labor market are important factors determining the current and future demand for skills. The first part of this Factbook provides an overview of India's economic and political situation and its effect on the education system.

1.1 The Indian Economy

The Indian economy underwent rapid changes in recent years and is one of the fastest growing countries in the world. Compared to other emerging market economies, defined as the economies belonging to the low- to middle income category that integrate most rapidly in the world economy (IMF, 2017). India's gross domestic product (GDP) per capita was with US$ 1,751[1] in 2015 rather low) (WDI, 2017). Other emerging countries in the same union of countries as India, the so-called BRIC countries (Brazil, Russia, China, India, South Africa), depicted higher levels of GDP per capital in 2015(US$ 11,159 in Brazil, US$11039 in Russia, US$ 6,497 in China, US$ 7593 in South Africa). In addition, India is far behind the income level of industrial countries (US$ 37,457 OECD average) (WDI, 2017).

One reason for India's relatively low GDP per capita is its large population (1,311 million people in 2015) and the high share thereof that lives in poverty. China, an economy with an equally large population (1,371 million in 2015), had much lower poverty rates. In 2011, 22.1 percent of the Indian population lived below the poverty line of US$1.9 per day, while only 6.5 percent of the Chinese population earned a daily income below this threshold in 2012 (WDI, 2017).[2]

Since gaining independence in 1947, the government of India attempted to establish a stable industrial base with the implementation of five-year plans following the Soviet Model. The aspiration of the first five-year plan was to improve the domestic savings rate, which they accomplished successfully. These market reforms laid the foundation for India's currently fast growing economy and enabled technical progress. Since the collapse of the Soviet Union in the 1990s, India adopted free-market reforms that enabled a prosperous middle class to emerge and an educated workforce to grow (Encyclopedia Britannica, 2016).

In recent years, India experienced strong economic growth due to structural reforms, capital inflows, as well as expansionary fiscal and monetary policies. These changes reduced poverty

[1] GDP per capita, PPP (constant 2010 US $)
[2] Data for India only available for 2011, for China only for 2012.

greatly. From 1990 to 2015, the Indian GDP grew 5.42 percent per annum on average. To put this into context, the average annual growth of OECD members over the same period was barely 0.92 percent (OECD, 2014).

In 2012, the continuous annual growth decreased as high inflation as well as current and fiscal deficits aggravated monetary and fiscal policy. Due to a fiscal consolidation in 2014 that reduced inflation and the current account deficit, India's economy has recovered ever since. The Indian government has recently attached more weight to inflation and reworked the monetary policy framework to sustain economic growth. (OECD, 2014)

Table 1: Value added and employment by sector, 2014

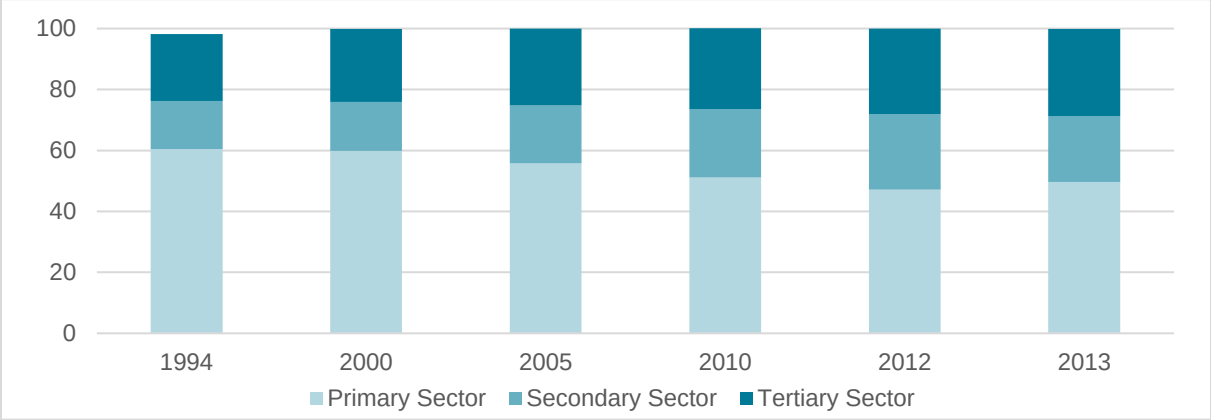
Sector	India: Value added (%)	EU-28: Value added (%)	India: Employment (%)	EU-28: Employment (%)
Primary sector	13.9	1.6	49.7	5.0
Agriculture, hunting and forestry, fishing	13.9	1.6	49.7	5.0
Secondary sector	18.7	24.3	21.5	22.0
Manufacturing, mining and quarrying and other industrial activities	1.9	18.9	n/a	15.6
of which: Manufacturing	14.9	15.3	n/a	14.0
Construction	7.4	5.4	n/a	6.3
Tertiary sector	67.4	74.1	28.7	73.1
Wholesale and retail trade, repairs; hotels and restaurants; transport; information and communication	26.4	23.8	n/a	27.5
Financial intermediation; real estate, renting & business activities	20.6	27.4	n/a	15.9
Public administration, defense, education, health, and other service activities	12.9	22.9	n/a	29.7

Source: Own illustration based on Eurostat (2015a; 2015b) and World Bank (2015a).

India owes its high growth in the recent years to the services sector. Table 1 shows the distribution of India's total value-added and employment across the primary, secondary (or industrial) and the tertiary (or services) sector for 2014 and compares it with the EU-28 states. The tertiary sector contributed the lions share to total value-added (67.4 percent), followed by the secondary (18.7 percent) and primary (13.9 percent) sector. Therein, internal and external trade, IT- and, research and development services, the real estate and housing sector, as well as tourism were important contributors to gross value-added in 2014. The importance of the primary, secondary or tertiary sector for the economy corresponds to that of industrial countries (see values for EU-28 countries). In terms of employment, the primary sector, especially agriculture, is still the most important sector, followed by the tertiary and secondary sector.

Figure 1 reveals how employment in the three sectors developed from 1994 to 2013. Figure 1 contains selected years due to limited data availability. The figure indicates that the primary sector receded and the tertiary sector gained importance in terms of employment. The primary sector remains the most significant sector in terms of sectoral employment but in regards of the economic value added, the tertiary sector supersedes the primary sector.

Figure 1: Employment by sector (as % of total employment), 1994-2013



Source: (World Bank, 2015).

Regarding the Global Competitiveness Index (GCI) of the World Economic Forum (WEF), India scores a value of 4.2, which ranks in the middle range (71st out of 144 countries analyzed). In the more complex areas, such as innovation (49th) or business sophistication (57th), India obtains a better standing than in its overall ranking. In contrast, India could improve its health and primary education (89th) and technological readiness (121st). (WEF, 2014)

The Global Innovation Index (GII), which analyses the innovativeness of a country, lists India in the second half of the ranking (81st of 141 countries analyzed). With a score of 31.7, it is situated behind China (29th with a score of 47.5) but before Indonesia (97th with a score 29.8). According to the Global Innovation Index of 2015, India achieved significant progress in its information technology (IT) and telecommunications industries but is struggling to establish sustainable reforms in regards of their innovation policy[3]. (Dutta et al. 2014)

1.2 The Labor Market

In this section, we describe India's labor market, with particular attention paid to the youth labor market and its performance on the KOF YLMI Index.

[3] According to the Global Innovation Index (GII), India needs to improve the following aspects of their policy to improve their innovation performance: political stability, tertiary inbound mobility or environmental performance.

1.2.1 Overview of the Indian Labor Market

The labor market in India improved considerably in the early 2000s. However, it is important to distinguish that the economic growth of India does not equate to growth of the labor market. Using structural reforms, India's government aimed to induce shifts in the composition of the labor market with the purpose of increasing the percentage of the work force in the tertiary sector. However, much of the targeted labor force stayed in informal jobs[4], mainly in the secondary sector, especially in construction jobs. It is important to highlight that even though new jobs in the formal sector are established, the vast majority of these jobs are still informal because the laborers do not benefit from employment benefits or any social security. (International Labour Organization, 2015)

The informal sector is very large in India. Unfortunately, the latest available data refers to the years 2011/12. In 2011/12, about 82.2 percent of India's workforce worked in the informal sector (ILO, 2016). Hence, besides employment in the formal sector, employment in the informal sector, as well as informal employment in the formal sector are important to mention in the Indian context.

The formal sector is the sector that we know from industrialized countries. For formal employment relations in the formal sector, workers and employers normally sign a legally binding contract, which equips both parties with a minimal set or rights and duties and both pay taxes and social security contributions. In contrast, the informal sector includes all own-account or family workers and businesses that are not formally organized or registered (Kulshreshtha, 2011).[5]

However, informal employment can also occur in the formal sector- that is, employment without a formal contract, paying taxes or social security contributions. Informal employment in the formal sector (or also illicit employment) is quite high in India (Kulshreshtha, 2011). In 2011/12, informal employment in the formal sector amounted to 79 percent of non-agricultural employment (ILO, 2016).

Hence, employment in the informal sector and informal employment in the formal sector in India are much more common than the employment known form industrialized countries. Not

[4] A worker has an informal job if the employment relationship is not regulated by national labour legislations, income taxation or social protection. (International Labour Organization, 2015)

[5] According to the definition of the ILO, the informal sector is defined by: "(a) low level of organization, (b) little or no division between labor and capital, and (c) labor relations based on casual employment and/or social relationships, as opposed to formal contracts." (Kulshreshtha, 2011).

surprisingly, the informal sector employment produced more than half (about 57 percent) of the total output of the Indian economy (net domestic product) in 2011/12 (Kulshreshtha, 2011).

According to the India Labor Market Update (August 2015), employment evolved strongly during the last decade. This is illustrated by the growth of a total workforce of 459 million workers in 2009/2010 to a total workforce of 472.9 million workers in 2011/2012. Furthermore, the growth of the labor force is highly focused on the urban rather than rural areas of the country. Although the majority of the population lives in rural areas[6], the urban areas are significantly more important for the Indian labor market.

Considering how quickly India's economy has grown, it is important to examine whether or not this growth was pro-poor growth[7]. The International Labour Organization (ILO) found no evidence of a link between the economic growth and the reduction of poverty in the 1990s. Consequently, the economic growth was only beneficial to the upper income class and did not strengthen the economic situation of the lower class. (International Labour Organization, 2008)

India's labor market regulations indicate labor laws are remarkably protective of labor and that labor markets tend to be inflexible. However, these laws only apply to the formal sector of the economy and therefore aggravate labor mobility. (Bhattacharjea, 2006)

The role of trade unions also gained in importance as economic growth continued, especially in the industrial sector[8]. Unions, which are governed by the 1926 Trade Union Act, aim to ensure that the interests of their workforce are met. (Ministry Of Labour And Employment India, 2010)

India's wage distribution is difficult to analyze due to the prevalence of the primary sector, issues in job classification (formal vs. informal) and difficulties in gathering reliable data. Nevertheless, the report by the International Labour Organization (ILO) reveals that wage growth is stable over time. According to the "Doing Business Indicators" of the World Bank, the minimum wage of India is currently US$ 135.40 in Mumbai and US$ 179.10 in Delhi[9].

Both, the labor force participation rate and the unemployment rate are illustrated in Table 2, which is based on estimated figures from the International Labour Organization (ILO). As shown, India's labor force participation rate is lower than the OECD average for both age groups. Counter-intuitively, India's unemployment rate is also lower than the OECD average.

[6] According to the World Bank database, the total rural population is more than twice as much as the urban population.
[7] Growth is considered to be pro-poor if poverty can be reduced via economic growth in absolute terms. By changing the distribution of the wages, the position of the lower class can be strengthened. (World Bank, 2004)
[8] The labour bureau of India states the total number of trade unions amounts up to 18,602 in the year 2010.
[9] The numbers refer to the minimum wage to the workers that are estimated in the case study.

However, these numbers misrepresent India's actual rate of unemployment, because unemployment is one of the largest social issues the country is currently experiencing.

Table 2: Labor force participation rate, unemployment rate by age 2014

	Labor force participation		Unemployment rate	
	India	OECD average	India	OECD average
Total (15-64 years)	55.4	71.2	3.7	7.5
Youth (15-24 years)	34.4	47.2	10.7	15
Adults (25-64 years)	63.8	76.2	2.2	6.5

Source: World Bank (2015), OECD (2015).

Educational attainment has advanced substantially but the youth still face major challenges regarding adjustment to the labor market. Consequently, policies should reflect this need. Moreover, pointed out that the labor force participation rate varies between rural and urban areas. The caste system also wields influence on India's labor market. This can be illustrated by examining young women in India: their labor force participation rate is much higher in scheduled castes, scheduled tribes, and other designated groups of historically disadvantaged indigenous people[10]. (International Labour Organization, 2013)

Table 3: Labor force participation rate, unemployment rate by educational attainment 2013 (persons aged 25-64)

	Labor force participation		Unemployment rate	
	India	OECD average	India	OECD average
Less than upper secondary education	-	63.2	29.9	13.0
Upper secondary level education	-	79.6	24.1	8.0
Tertiary education	-	87.6	23.1	5.3

Source: World Bank (2010), OECD (2015).

Due to the country's rapid technological progress, the qualification requirements will also change drastically in the next few years. Therefore, the education system needs to meet the requirements of the changing labor market. (Ernst & Young, FICCI, 2013)

[10] Members of scheduled castes, scheduled tribes and other designated groups of historically disadvantaged indigenous people are socially disadvantaged. According to the Census of India in 2011, 16.6 percent of the population of India is a member of a scheduled caste. (Government of India, 2011)

1.2.2 The Youth Labor Market

The KOF Swiss Economic Institute developed the KOF Youth Labour Market Index (KOF YLMI) to compare how adolescents participate in the labor market across countries (Renold et al., 2014). The foundation for this index is the critique that a single indicator, such as the unemployment rate, does not suffice to describe the youth labor market adequately nor provide enough information for a comprehensive cross-country analysis. To increase the amount of information analyzed and to foster a multi-dimensional approach, the KOF YLMI consists of twelve labor market indicators[11] that are grouped into four categories.

Dimensions of the KOF YLMI
Activity state - Unemployment rate - Relaxed unemployment rate[12] - Neither in employment nor in education or training rate (NEET rate)
Working conditions Rate of adolescents: - with a temporary contract - in involuntary part-time work - in jobs with atypical working hours - **in work at risk of poverty**[13]Vulnerable unemployment rate[14]
Education - Rate of adolescents in formal education and training - Skills mismatch rate
Transition smoothness - Relative unemployment ratio[15] - Long-term unemployment rate[16]
Source: Renold et al. (2014).

The first category describes the *activity state* of youth (ages 15-24 years old) in the labor market. Adolescents are classified according to whether they are employed, in education, or neither (unemployed, discouraged and neither in employment nor in education or training; see info box to the right). The category *working conditions* and the corresponding indicators reflect the type and quality of jobs the working youth have. The *education* category accounts for the share of adolescents in education and training and for the relevance of and their skills on the labor market. The fourth category, *transition smoothness*, connects the other three categories by capturing the school-to-work transition phase of the youth. Each country obtains a score of 1 to 7 on each particular indicator of the KOF YLMI. A higher score reflects a more favorable situation regarding the youth labor market and a more efficient integration of the youth into the labor market.

One of the major drawbacks of the KOF YLMI is data availability. When data is lacking, a category can occasionally be based on a single indicator or must be omitted entirely when not a single indicator for that category exists in a given country. A lack of indicators can make

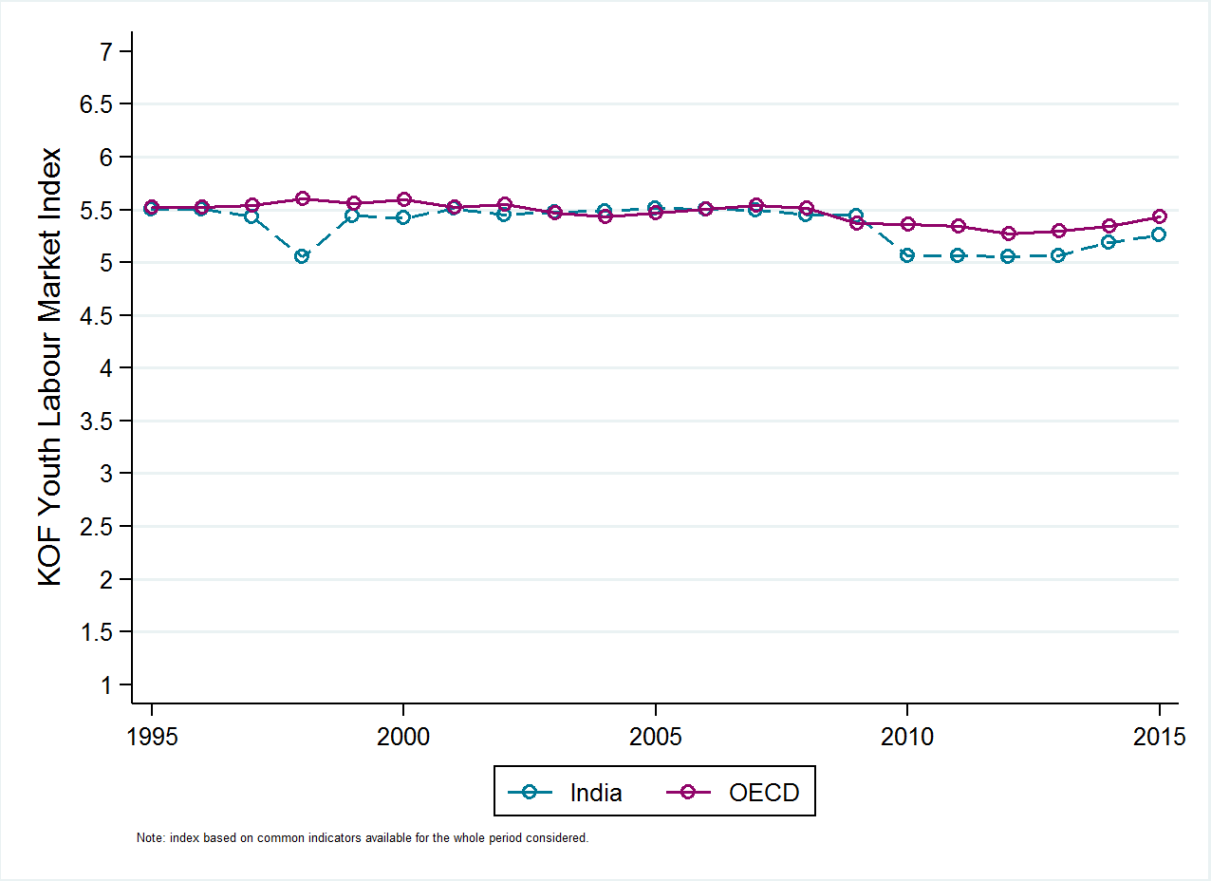
[11] The data for these indicators are collected from different international institutions and cover up to 178 countries for the time period between 1991 and 2012.
[12] It is calculated as the number of unemployed and discouraged workers as a share of the entire labour force. Discouraged workers have given up the search for work (not actively seeking), although they have nor job and are currently available for work (also: “involuntary inactive”).
[13] Those who cannot make a decent living out their earnings, being at risk of poverty as a percentage of the working population.
[14] Share of the employed population working on their own account or those working in their family business and thus contributing to the entire family income. Both are less likely to have formal work arrangements and are therefore less protected by labour laws and more exposed to economic risk.
[15] Is defined as the youth unemployment rate (15-24 years) as a share of the adult unemployment rate (25+). If the youth cohort is affected in the same way than the adult group with respect to unemployment, then the relative unemployment ratio will be equal to one. If the youth are relatively more affected, then the ratio will be bigger than one.
[16] Those unemployed for more than one year (52 weeks) in the total number of unemployed (according to the ILO definition).

comparisons across certain countries or groups of countries problematic and sometimes even impossible.

1.2.3 The KOF Youth Labor Market Index (KOF YLMI) for India

Figure 2 below shows the KOF YLMI India and the OECD average for the time 1995 to 2015. The only data available for India is the unemployment ratio and the relative unemployment ratio.

Figure 2: KOF YLMI for India in comparison to OECD average, 1995-2015



Source: (KOF, 2017).

Due to the limited data availability, it is difficult to make a qualitative content analysis of India's results on the KOF YLMI. Nevertheless, we can observe that the OECD average scores slightly above India. With the availability of more indicators, we would most likely see wider differences between the computed indexes of India and the OECD average.

1.3 The Political System

When assessing the performance of a country's education system, understanding the framework of a country's political system as well as the political goals with respect to its

education system is crucial. In this overview, we explain India's politics broadly and then go into depth regarding how its politics and goals affect its education system.

1.3.1 Overview of the Indian Political System

India gained independence and became a parliamentary democracy in 1947. According to its constitution, India regards itself as a "sovereign secular democratic republic". (Government of India, 2016a)

The structure of the constitution is similar to the British model of the parliamentary democracy and the constitution of the United States of America. India's political system includes a separation of powers[17], a supreme court, and a distinction between the federal and state governments. (Encyclopedia Britannica, 2016)

India is a union of 29 states and 7 union territories. Both are separate administrative units. The difference between both is that while states have their own elected governments, union territories are directly ruled by the central government. One example of a union territory is Delhi- which is India's capital, and seat of its central government. The president of India is the head of the state, whereas the prime minister, who works closely with the council of ministers, is the head of the government. The Indian legislative branch consists of two houses, the Lok Sabha (house of the people) and the Rajya Sabha (council of states). (Government of India, 2016b)

India managed to establish a successful political system that is sustainable for a newly industrialized country (NIC). The political system is strongly characterized by a multilingual[18], multi-cultural and multi-religious society – characteristics that have also lead to some challenges. (International Journal of Humanities and Social Science Invention, 2013)

India is one of the most populous countries in the world. Therefore, elections of political officials require good organization and overview[19]. The election system in the Lok Sabha, which is the first chamber of the Indian parliament, is based on the first-past-the-post (FPP) voting system. Therefore, the candidate with the most votes is directly elected. For elections, the country is split up geographically into constituencies, in which the people vote for the candidate of their choice. Members of the Rajya Sabha are selected indirectly, meaning that candidates are elected by each state rather than by the whole population. The president of India nominates 12 candidates to the Rajya Sabha as representatives of literature, science, art and social

[17] Separation of powers includes the distinction between legislature, executive and judiciary.
[18] According to the Government of India, the country currently counts 122 official languages in their country that resulted from a data collection in 2001. (Government of India, 2001)
[19] The election to Lok Sabha in 2004 involved 39 billion people. Civilian police as well as security had to ensure that the election took place in peace.

services. Regardless of which caste or constituent one belongs to, everyone above the age of 18 has the right to vote. (Election Commission of India, 2016)

India features a multi-party system in which parties are categorized as being national, state or regional. The Election Commission of India approves the status of a party based on various criteria for recognition. The regional parties have more political influence than the state parties. India currently has of 36 state parties and 329 regional parties. (Elections.in, 2015)

The World Bank's Worldwide Governance Indicators reveal that the Indian government still has room for improvement. The country still faces negative values in almost every category analyzed, such as "political stability and no violence" as well as the "control of corruption".[20] (World Bank, 2014)

The Democracy Index of 2014 categorizes India as a flawed democracy (ranking 27th out of 167 countries analyzed). The index's identified grievances include the overall functioning of the government and India's political culture. (Economist, 2015)

Studying the Corruption Perception Index of 2014, it is evident that India still faces problems with corruption. India reaches a score of 38 out of 100 points and ranked 85th out of 175 countries analyzed. (Transparency International, 2014)

1.3.2 Politics and Goals of the Education System

India features a centralized federal structure, which also has an effect on education policy. The 29 states possess the majority of the responsibility and freedom regarding their education systems, but there are centralized institutions that also have far-reaching consequences on the education system. (Adick, 2013) Besides the public sector, the education system of India is also controlled by the private sector.

The most important ministries for the coordination of the education system are the Ministry of Human Resources and Development (MHRD) – which incorporates the All India Council for Technical Education (AICTE), the National Council for Education Research and Training (NCERT) – and the Ministry of Labour and Employment (MoLE) (Agrawal, 2013).

One of the major challenges in the recent past was to improve the primary education attendance rate as well as to broaden the literacy across the country. The literacy rate[21]

[20] The estimate of governance reaches from -2.5 points to 2.5 points, which means that the achieved point score is either weak for negative values or strong for positive values.
[21] The overall adult literacy rate for the population 15+ years for both sexes was 69.3 percent in 2011.

between India's states differed strongly: while the state of Kerala features a literacy rate of nearly 100 percent, Bihar only has a literacy rate of about 50 percent.

In order to improve the quality of the entire education system, Government of India lead by Indira Ghandi launched the first National Policy of Education (NPE) and the corresponding Programme of Action in 1968. This first NPE advanced universal access to and enrolment in primary education and lead to a substantial improvement in the quality of the education system in general. This NPE was renewed in 1986 and again in 1992. In 2016, the Government of India announced its plans to launch a new NPE (MHRD, 2017) (see also (MHRD, 2016)).

Another achievement was the implementation of the 2009 Right to Education Act, which made schooling free and compulsory for all children aged 6 to 14 (British Council, 2014). However, the law is still under-enforced due to a lack of litigants and a lax implementation on the part of the state governments (The Hindu, 2017).

Nevertheless, India still faces major issues regarding political corruption in the education system. Investment in education grows continuously but 35 percent of the population is still illiterate, only 15 percent of the Indian students are able to attend high school and 57 percent of all college professors do not hold a master's or a PhD degree. (Borah, 2012)

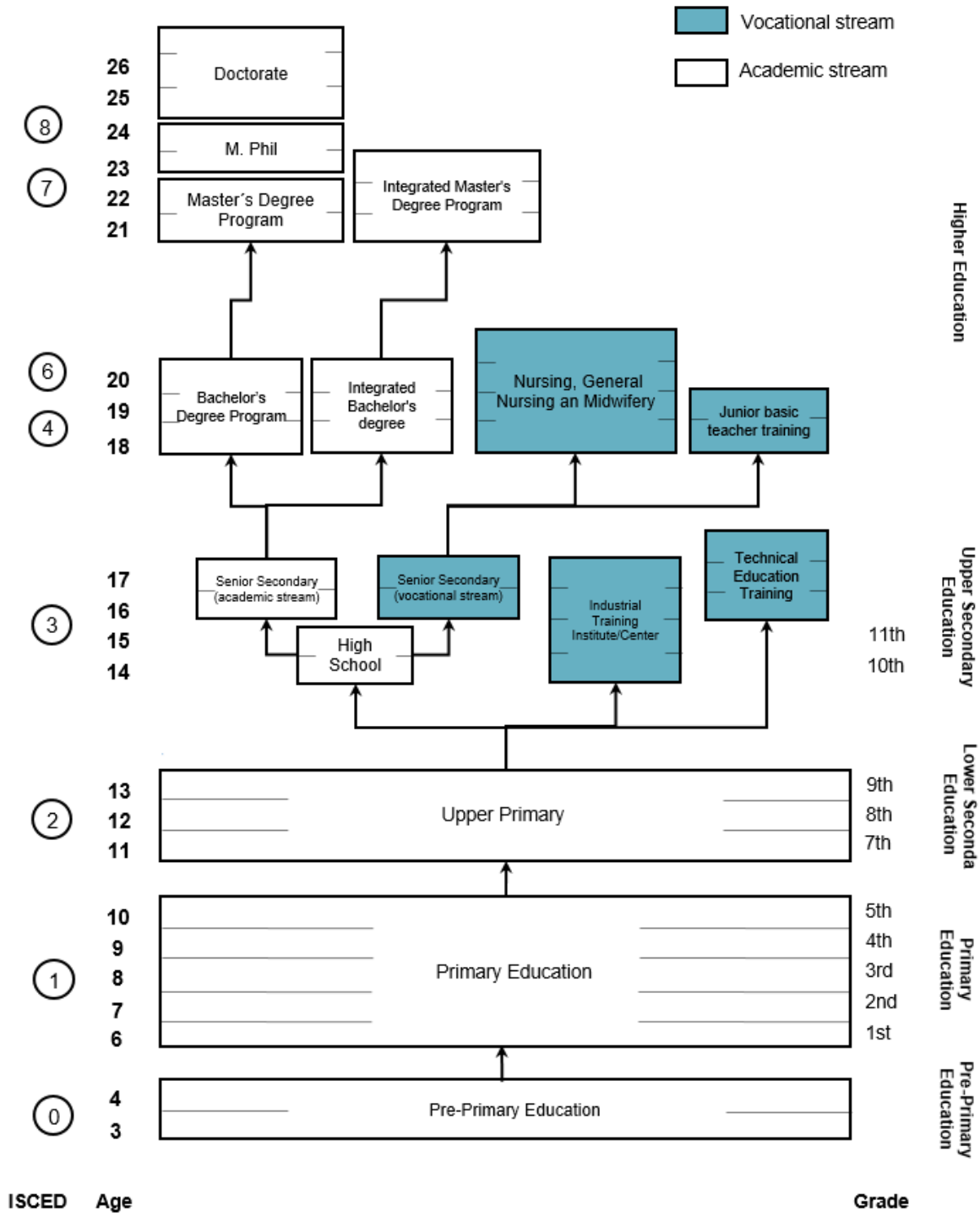
2. Formal System of Education

According to the International Standard Classification of Education (ISCED) 2011 of the UNESCO Institute of Statistics, India's education system is subdivided into nine levels (0-8). Figure 3 illustrates a simplified overview of the Indian education system by education level.

India's education system is the second largest in the world in terms of enrollment and is still significantly influenced by the British education model. The 2009 Right to Education Act made schooling free and compulsory for all children aged 6 to 14 (British Council, 2014). Consequently, the mandatory part of the education system involves eight years of elementary education: five years of primary education and three years of upper primary education. Secondary education comprises two years of lower secondary and two years of upper secondary (also called senior secondary) education. After the first two years of secondary education, students choose either the academic path towards tertiary education or the vocational path. Tertiary education takes place at over 18.000 colleges and 425 universities[22].

[22] Out of the 425 universities, there are 20 universities at present, which are federal universities.

Figure 3: The Indian education system[23]



Source: Own illustration, based on (UNESCO, 2011a).

[23]The size of the boxes does not coincide with the actual size or importance of the program in the education system.

Before its independence, education in India was a right reserved for the Brahmin[24], the social elite. Under British rule (1700s until 1947), India's education policies reinforced this tendency by tying entrance as well as advancement in government service to academic education. Because of this existing privilege of education, the Brahmins still possess a special status compared to other social castes. As shown in **Error! Reference source not found.**, which illustrates gross enrolment since 1950 by education level, the system of education has changed rapidly. Although most students still originate from middle to high-level castes, there is also an increase in the accessibility of education for the other castes. (Cheney, 2005)

Error! Not a valid bookmark self-reference. shows the gross enrolment ratio (GER) by education level. The GER illustrates the number of students enrolled at an education level proportional to the population of the corresponding age group. For example, the gross enrollment ratio for the primary education level compares the actual number of students in primary education to all those who are the official age to attend primary education.[25]

Table 4: Gross Enrolment Ratio (GER) 2014

Educational level	Boys	Girls	Total
Elementary	93.3	96.9	95.0
- Lower primary	98.1	100.6	99.3
- Upper primary	84.9	90.3	87.4
Lower secondary	75.5	73.7	73.6
Higher/Senior secondary (academic and vocational)	49.1	49.1	49.1
Tertiary	22.3	19.8	21.1

Source: Own illustration, based on Government of India (2014a).

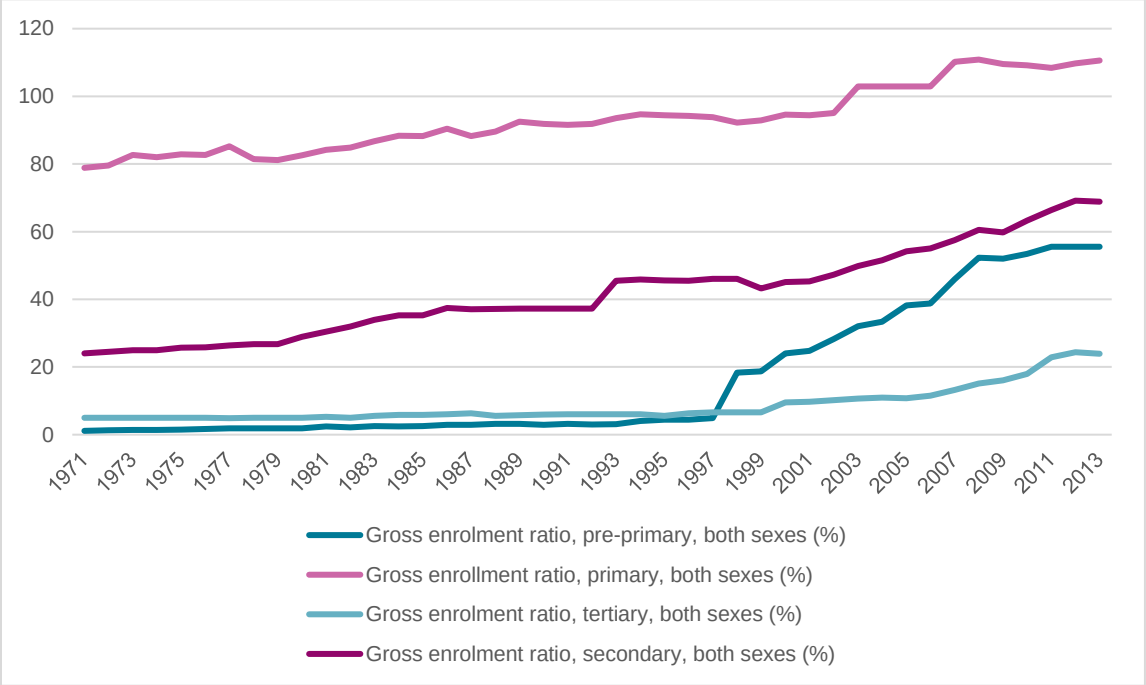
The Right to Education Act was passed in 2009, which made schooling free and compulsory for all children aged 6 to 14. As one can see in **Error! Not a valid bookmark self-reference.**, the aggregate GER for the elementary education level still only totals 95 percent in 2014. While almost all children (99.3 percent) attended lower primary, only 87.4 percent attended upper primary education. These numbers could be the result of a high drop-out rate of students at the upper primary level (see next subsection for more details). Especially in rural areas, one reason for the high drop-out could be the high opportunity cost of sending the children to school instead of having two more helping hands at home. School enrolment is a decreasing function

[24] Brahmin is the highest social caste in India. The caste usually consisted of priests, philosophers, teachers or religious leaders. Until today, the Brahmin still occupy a prestigious position in the society of India.
[25] A gross enrollment ratio of 100 corresponds to a situation where each child in a given country is enrolled in primary education. A value above 100 could occur due to students who are older than the typical enrolment age for primary education (e.g. have to repeat grade, adult learners). A value below 100 implies that not everyone who is in the typical age for primary education is actually enrolled.

of the education level: the GER was comparatively lower at the secondary education level in 2014 (73.6 percent of all students attended lower, only 49.1 percent higher/senior secondary education). Only 21.1 percent of all Indians in the relevant age range for university actually enrolled at a university in 2014.

However, enrolment in education at all levels increased greatly since the beginning of the 1970s, as shown in Figure 4. Enrolment has increased at all education levels. In particular, enrollment has risen considerably at the end of the 1990's, when the consequences of the economic liberalization, initiated at the beginning of the 1990s, started to come into effect (Anand, 2014).

Figure 4: Development of the GER from 1971 to 2013



Source: Own illustration, based on World Development Indicators (World Bank, 2016).

2.1 Pre-Primary Education

Various types of pre-primary schools are available and the demand for pre-primary education is currently increasing. There are 130 pre-primary education programs available that focus on child development between the ages of 0 to 6. (UNESCO, 2011b)

The following institutions represent the largest part of the pre-primary education system:

- **Private play schools**: Play groups for children ages 18 months to three years

- **Kindergarten**: Two different types of kindergartens exist: lower kindergarten for children between the ages of three to four and upper kindergarten for children between the ages of four to five

Private schools and government-integrated child development services (ICDS) centers primarily provide pre-primary education. The ICDS provides learning environments for children between the ages of 3 to 6 and offers early child care for children under the age of three. The Seventh All India Education Survey estimates that there are as many as 493,700 pre-primary institutions (UNESCO, 2011b). Because pre-primary education is not compulsory, it is not surprising that the GER in pre-primary schools is rather low (55.5 percent in 2011). Nevertheless, the GER has improved considerably from 24 to 55.5 percent from 2000 to 2011 (World Bank, 2015).

2.2 Primary and Lower Secondary Education

As illustrated in Figure 3, elementary education consists of two parts: lower and upper primary school. Elementary education is compulsory from age 6 to 14 and free of charge. In most states and union territories, the age range for compulsory education coincides with the duration of elementary education. In 23 of the states/union territories[26] elementary education lasts eight years, while in the other twelve it lasts seven years (UNESCO, 2011b). Therefore, in most states and union territories, lower primary school consists of grade levels 1 through 5, encompassing an age range of 6 to 11 years. The upper primary education consists of the grades 6 through 8 and an age range of 11 to 14 years (British Council, 2014). In all other states/union territories, lower primary lasts four, upper primary three years. At the end of elementary education, students receive a certificate of completion (UNESCO, 2011b).

Recent reform efforts have concentrated on compulsory school attendance rather than on the quality of the education. Consequently, state-run schools distinguish themselves greatly regarding quality. Students enrolled in state-run schools also face high dropout rates: The Ministry of Human Resources and Development (MHRD) registered that 39 percent of boys and 33 percent of girls do not complete elementary education. According to the World Bank database, the dropout rate for the lowest income classes are about four times higher than the upper income classes. Private schools appear to gain an advantage over state-run schools, but these are only accessible to the middle and upper class families. Low-cost private

[26] As mentioned in section 1.3, India consists of 29 states and 7 union territories- both are not overlapping concepts. The difference between both is that states have their own elected governments, union territories are directly ruled by the central government. One example of a union territory is Delhi.

schools[27], which are an alternative to state-run and private schools, tend to have an inferior infrastructure compared to state-run schools. However, these schools tend to hire more teachers and thus have smaller classes, increasing the quality of education. Besides the quality of the public schools, another cause of increasing demand for private schools is the population growth and subsequent excess demand for places in the public. (Cheney, 2005)

While more than two thirds of students are enrolled in public schools at the elementary level, two thirds of students at the secondary level are enrolled in private schools. One reason may be that only middle and upper class families can afford sending their children to secondary school.

2.3 Upper secondary Education

Secondary education consists of lower and higher/senior secondary education (academic or vocational). In 23 states/union territories, lower secondary education typically includes grade nine and ten, higher/senior secondary education usually covers grades eleven and twelve. In the other 12 states/union territories, lower secondary education lasts form grade eight to ten, higher/senior secondary education from grade 11 to 12. (UNESCO, 2011b)

The academic path at the higher/senior secondary level aims to prepare students for tertiary education at a university or any other higher educational institution. The vocational path prepares students for either work or additional vocational education at a polytechnic or an Industrial Training Institute (ITI). Polytechnic institutes offer various certificate and diploma programs at the lower and higher/senior secondary level, most of which are technical or engineering degrees.

All states/union territories conduct public examinations at the end of lower or higher/senior secondary school. These are carried out by the State Boards of Secondary and Higher Secondary Education. If the academic path is pursued, students will receive a certificate[28] after graduating. (UNESCO, 2011c)

2.4 Postsecondary / Higher Education

Higher education is a shared responsibility between the Union or Central Government and the State Government. Universities and colleges provide general higher education, whereas

[27] It is difficult to gather reliable data about the geographical proliferation of low-cost private schools. Therefore, many low-cost private schools remain unrecognized and unregistered by the government.
[28] There is a great variety of certificates, which students can receive after graduating from secondary education: The Indian School Certificate, the Intermediate Examination Certificate, the Higher Secondary School Certificate or the All India Senior School Certificate.

polytechnics provide higher professional education. In order to take undergraduate courses, every student is required to take a subject-specific entrance test. Some of these are state-specific, while others are institution-specific. The number of private institutions, especially with a focus on engineering and medicine, is rising. The government is also planning on expanding polytechnic institutions, predominantly in undeveloped areas. One of the major challenges in higher education is the integration of an increasing number of graduates into the labor market. (Adick, 2013)

Higher education is split up into three different levels: Bachelor (undergraduate), Master (post-graduate), Pre-doctoral and Doctoral/PhD. programs. The duration of the Bachelor varies between three to five years depending on the studies pursued[29]. A Master usually takes two additional years to complete. Master degree programs can be coursework-based without writing a thesis or research. Admission to a Master in engineering or technology requires taking the Graduate Aptitude Test in engineering or the Combined Medical Test, both of which are centralized tests. Pre-doctoral programs, i.e. master of philosophy (M.Phil), can be acquired after completing a Master degree. These can be either research-based or coursework-based. Students can register for a Doctorate/PhD upon completion of a pre-doctoral program or after a Master degree. (UNESCO, 2011c)

After China and the USA, India has the third largest tertiary education sector in the world. As already mentioned, access to higher education was limited and primarily reserved for the middle and upper classes, with less than a million students enrolled in the available 500 colleges and 20 universities before independence. Since India's independence, universities and colleges have grown significantly. However, the major problem facing the tertiary education sector is the quality of education, not the quantity. One of the primary goals in recent past was to enhance social mobility and equality of opportunity[30], leading to a minimization of distinction and excellence in institutions. The low quality of higher education in India involves the danger of a devaluation of higher education degrees on the labor market. (Cheney, 2005)

2.5 Continuing Education (Adult Education)

Since the First Five Year Plan, a series of programs was introduced with the purpose of extending adult education in terms of enrollment. In 1988, the National Literacy Mission (NLM) was launched. The NLM pursued the goal of spreading literacy to non-literates in the age group

[29] Bachelor degree programmes in arts, commerce and sciences take up to three years. Undergraduate programmes in agriculture, dentistry, engineering, pharmacy, technology and veterinary medicine last four years.
[30] One third to 40 percent of the enrolled students originate from lower socio-economic classes. Moreover, female students currently represent approximately 35 percent of the total enrolments.

of 15-35 years. As of today, the NLM had made 127.45 million people literate[31]. Both the Central and State Governments are currently engaged in promoting and strengthening adult education in India. The National Mission Authority (NLMA) is the agency responsible for planning Adult Education Programmes. The Saakshar Bharat Program (SBP), which is the further development of the NLM, covers adult education. The SBP is a centrally sponsored program with the target to impart functional literacy to 70 million adults aged 15 years and up. Additional goals are to cover 1.5 million people under a basic education program and 1.5 million people under a vocational program. The SBP mainly focuses on educating women but also Scheduled Castes, Scheduled Tribes, other disadvantaged groups, and adults in rural areas. For every targeted group, there is a specific approach and a tailored strategy. Increasing literacy to 80 percent and the reduction of gender-specific disparity to 10 percent are the main objectives of the program. (Government of India, 2016c)

2.6 Teacher Education

To become an elementary school teacher, students formally need 10 to 12 years of general school, although more states are asking for 12 years plus an additional two years of professional education at an elementary teacher training institute. These can be public, private or a mix of both. So-called District Institutes of Education and Training (DIET), which provide pre-service and in-service training for teachers, have been established in all states. The more than 500 DIETs for teacher training are financed by the central government, while there are more than 7000 self-financing institutions throughout the country. Becoming a secondary teacher requires a Bachelor's degree from a college of education or university, as well as an additional year of professional education. Teachers for special education are trained by the National Institutes for the Handicapped or non-governmental organizations. (UNESCO, 2011b)

Throughout the country, teacher's salaries are rather low in comparison to salaries in the private sector. The low salaries are also one reason why well-educated university graduates choose not to become teachers. Further reasons include the high work-load of teachers and the low quality of the teacher training. (UNESCO, 1990)

The central government strategy to improve teacher education includes preparing teachers for the school system (pre-service training) and expanding the competencies of school teachers (in-service training) (Government of India, 2016d).

[31] 60 percent were females, 23 percent originated from Scheduled Castes and 12 percent from Scheduled Tribes. The Total Literacy Campaigns comprised 597 districts of which 502 reached Post Literacy stage and 328 districts reached Continuing Education stage.

3. The System of Vocational and Professional Education and Training

This section of the Factbook describes India's vocational education and training (VET) system at the upper secondary level and the professional education and training system (PET) at the tertiary level in more detail. The term vocational and professional education and training (VPET) refers to both the VET and the PET system.

3.1 Vocational Education and Training (VET; Upper Secondary Education Level)

The Apprentice Act of 1961 laid the foundation for VET and enabled apprentices to receive a contract with a company and a certificate or diploma. The MHRD introduced vocational education in 1988 as an alternative to the general higher education pathway with a federal scheme called "Vocationalization of Secondary Education". The scheme offers about 150 vocational subjects in the 11th and 12th grade with the purpose of providing students with employable skills in two years of education (Renold & Probst, 2016). The concrete structure of the VET programs will be explained in the next subsection 3.1.1.

The VET system in India has received more attention from the government in recent years. The government became aware of India's demographic advantage over other countries, due to a growing working age generation. However, India only maintains this advantage if it invests in the human capital of this future workforce – for example through the provision of more and better quality VET programs (Kumari, 2016). For the first time, the government introduced a "Skill Development Mission" during the Eleventh Five Year Plan (2007-2012) with an outlay of RS 228 billion (US$ 3,405,654) (Government of India, 2008)[32]. In addition, as stated by Renold & Probst (2016), in 2007, the government set the target of providing VET to more than 500 million people by the end of 2022. India's government hopes to achieve this goal with a stronger involvement of the private sector.

In fact, the lack of an involvement of the private sector has been one of the key deficiencies of the Indian VET system and has led to a mismatch of the skills provided by the VET system and those demanded on the labor market. One expression of this is the high unemployment level of VET graduates along with the projected skill shortages reported by several sectors of

[32] According to Mehrotra (2012), the country needs approximately 291 million technical professionals by the end of 2022 if it wants to compete with the strongest economies in the world.

the economy.[33][34]The World Bank (2017) states that less than 40 percent of VET graduates in India find employment.

According to Renold & Probst (2016), the poor quality of formal VET education and lack of linkage to employment opportunities are the main reasons why the country still faces such low enrolment rates in VET programs. A report commissioned by the FICCI states that only 5 percent of India's workforce obtained a formal vocational education degree or equivalent. Furthermore, only 2 percent of the workforce aged 15-29 completed vocational education and 8 percent received informal vocational education (FICCI, 2010).

In the Indian context, a distinction has to be made between the formal and informal VET system. According to Renold & Probst (2016), formal education is a structured training program leading to a certificate that is officially recognized by the involved training providers/partners (state/central government and others). In contrast, informal VET is provided outside the formal education system. In India, knowledge of a learned craft is often passed down from parents to children.

In the following subsection, we explain the architecture of the formal VET system. The informal VET system is described in the subsection thereafter.

3.1.1 Formal System of Vocational Education and Training (VET)

As illustrated in Figure 3, the entry point for vocational education is at the lower secondary level. There are three main VET providers: the state-run Industrial Training Institutes (ITIs), the privately-organized Industrial Training Centers (ITCs) and the Polytechnics, which are managed by the MHRD. All three providers offer VET programs at the lower and higher/senior secondary level.

The formal VET system is still very small compared to other countries and has yet to reach its full potential (Agarwal, 2009). The overall VET system[35] of India provides space for as many as 1.6 million students. However, the fact that there are 260 million people in the age group of 15-29 (National Sample Survey Organisation, 2006) reveals that the relative number of VET students is very low. (Kumari, 2016)

[33] An efficiency study conducted by the International Labour Organization (ILO) in three of the largest states (Orissa, Maharashtra, and Andhra Pradesh) revealed that 33 percent of the graduates from public training institutions and over 70 percent of the graduates of private institutions in Andhra Pradesh were unemployed (International Labour Organization, 2003).
[34] As an example, the "Survey on emerging skill shortages in the Indian Industry" conducted by the Federation of Indian Chambers of Commerce and Industry (FICCI) in 2007, the country faces significant skill gaps in key sectors[34] of the economy (FICCI, 2007).
[35] The overall VET system of India consists of VE streams, Polytechnics, ITIs, ITCs and Apprenticeships.

Industrial Training Institutes (ITIs) and Industrial Training Centres (ITCs)

The state-run Industrial Training Institutes (ITIs) are led by the Directorate General of Employment (DGE), the Ministry of Skill Development and Entrepreneurship, and the Central Government of India. The DGE is the apex organization of the Ministry of Labour and is responsible for the development and coordination of programmes relating to vocational training at the national level (Indian Ministry of Labour & Employment, 2017). The main task of the Ministry of Skill Development and Entrepreneurship is to coordinate all skill development efforts across the country.

The privately-organized Industrial Training Centers (ITCs) are financed and managed by private organizations or non-governmental organizations (Kumar, 2016).

The total number of ITIs and ITCs has increased from 54 in 1953 to 10,750 in 2014. Thereof, 2,275 are ITIs (state-owned) and 8,475 ITCs (privately-owed). The ITIs and ITCs offer two main programs: the Craftsmen Training Scheme (CTS) and the Apprenticeship Training Scheme (ATS). Both will be described in detail in the following.

Craftsmen Training Scheme (CTS)

The CTS was established in 1950 by the DGET ("predecessor" of the DGE). Students can enter the CTS between levels 8 and 12. The content of the CTS is defined by a standardized curriculum that is designed by the National Council for Vocational Training (NCVT). The curricula are implemented at ITIs/ITCs under the supervision of the State Council for Vocational Training (SCVT). ITIs/ITCs provide training in 133 different trades, 70 of which are engineering and 63 non-engineering trades.[36] The vocational training courses offered at ITIs/ITCs last between six months to three years, depending on the trade. (Kumar, 2016)

The purpose of ITIs is to educate skilled workers to meet the needs of the industry. The students undergo 42 hours of training, of which 28 hours are practical training and 10 hours theoretical training (4 hours are intended for trade theory, 2 hours for workshop calculation, 2 hours for engineering drawing and 2 hours for social studies). Another 4 hours include activities such as library studies and physical training. (Labour Department of India, 2015)

The NCVT executes the All India Trades Test (AITT). Students can take this test to receive the National Trade Certificate (NTC). (Government of India, 2014b)

[36] For example: Typewriting, Secretarial Practices, Computer Operator & Programme Assistant, Architectural Draughtsmanship, Electrical Technician, Electronics, Refrigeration & Air Conditioning, Plumbing, Library Assistant, Cutting/Tailoring & Dress Making (UNESCO, 2011c).

While students do not need to pay for education at ITIs, ITCs operate differently because they are privately-funded. ITCs are affiliated with the NCVT through the State Directorate of the state in which they are located. In practice, any private company can establish an ITC. (Kumar, 2016)

As mentioned earlier, the labor market prospects of CTS graduates are not very good. The social status of the CTS, along with VET in general, is not very high and the majority of graduates have difficulties finding jobs. General employer opinion of CTS graduates is that they lack practical skills, such as team-work or communication skills. (Kumar, 2016)

Apprenticeship Training Scheme (ATS)

The Apprenticeship Training Scheme (ATS) was introduced in the Apprentices Act of 1961. Through ATS, employers in certain industries employ apprentices in pre-specified ratios relative to the workforce. Each industry with an ATS regulates the training program in detail. Programmes must follow the recommendations of the Central Apprenticeship Council[37] regarding the syllabus, period of training etc. The Central Apprenticeship Council is an apex statuary body that advises governmental policy-makers and prescribes norms and standards with respect to the ATS (DGT, 2017) (Directorate of Employment and Training , 2017).

Students must be at least 14 years old to be admitted to an ATS. The minimum educational qualifications needed depends on the trade in question. The period of training in the ATS normally takes three years but can vary from six months to four years.

Each apprentice receives basic vocational training (ability to handle instruments, machines, or other equipment) that is offered either in Basic Training Centres (BTCs) or Related Instruction Centres (RICs). Setting up a BTC and employing novices as apprentices is obligatory for companies having more than 250 employees. Companies with less than 250 employees can send their apprentices to ITIs or ITCs. The training at BTCs is similar to that at ITIs/ITCs. (Government of Maharashtra, 2017)

At BTCs, apprentices receive on-the-job/shop-floor training (Directorate of Employment and Training , 2017). Besides this practical training, apprentices also receive trade-specific theoretical training in trade theory, workshop calculation, and engineering drawing. This part of the apprenticeship training must be approved by the state government, which finances it while the company provides the facilities. (Government of Maharashtra, 2017) Upon completion of the ATS program, apprentices are grated a National Apprenticeship Certificate (Directorate of Employment and Training , 2017).

[37] Under the authority of the Apprentices Act, 1961, the Central Apprenticeship Council created a scheme for the classification of numerous trades under a system of national occupational codes. These rules contain both the Council guidelines and the various classifications (ILO, 2017).

In 2015, 28,500 companies offered apprenticeships under the ATS. This number is very low compared to the number of industrial companies in India. Only 211,000 apprentices were enrolled in ATS, compared to 359,000 available seats, showcasing the low attractiveness of the ATS for students (Gupta, Raman , & Kris, 2016).

In 2013, 252 professional courses were available in various fields, e.g. in agriculture, economics, trade, housekeeping, health & paramedical professions, humanities, and engineering. The MHRD and DGT regulate the different programs.

The apprentice receives a monthly stipend[38] throughout their training, which depends on their field of study[39] and is borne by the employers (with the exception of stipends for technician training, which are borne equally by the employer and the central government).

The NCVT conducts the AITT biannually. Students who pass the AITT will receive the National Apprenticeship Certificate (NAC). In addition to the above-mentioned CTS and ATS, the DGT also offers more training programs, e.g. Advanced Vocational Training Scheme (AVTS), Skill Development Initiative Scheme (SDIS), and Special Coaching Scheme for Scheduled Castes, Tribes and Vocational Rehabilitation Centers. (Renold & Probst, 2016)

Polytechnics

India has experienced a remarkable expansion of its polytechnic engineering schools. However, engineering graduates who have pursued degrees at the universities are still valued higher than engineering diploma holders from polytechnics. Due to little vertical mobility from vocational/ technical career paths towards academic programs, the current VET system is not as attractive as academic education. (Kumari, 2016)

The MHRD is responsible for polytechnics, which offer three-year programs in subjects such as electrical, mechanical, and civil engineering. New subjects such as information technology, medical technology, hospital technology, architectural assistant, and electronics have been established recently. Polytechnics underwent rapid growth in recent years: the number of polytechnics increased from 1,203 in 2004/05 to 1,924 in 2015. Polytechnics also offer post and advanced diploma programs, which last one or two additional years. The MHRD also offers Community Polytechnics (CPs) that aim to distribute technologies to the rural areas that represent the largest part of the country. (Renold & Probst, 2016)

The main goal of polytechnics is to educate a well-qualified workforce and to establish stronger ties between technicians and engineers. Although small and medium-sized companies prefer employing technicians, an academic engineering degree is still valued higher than a technician

[38] Apprentices receive the following rates: 2100 Rupees (US$ 31,30) in the first year, 2400 Rupees (US$ 35,77) in the second year, 2800 Rupees (US$ 41,73) in the third year and 3100 Rupees (US$ 46,20) in the fourth year.
[39] More info under: http://www.dget.nic.in/content/innerpage/faqs-apprenticeship-training-scheme.php.

diploma received from a polytechnic institution. The central government and the MHRD are trying to establish more polytechnics and CPs in regions that do not already have them at their disposal. (MHRD, 2015)

3.1.2 Informal Vocational Education and Training (VET)

The informal economy represents the largest part of India's labor force. As mentioned in Section 1.2.1, 82.2 percent of India's workforce is employed in the informal sector. In the informal economy, knowledge of vocational trades is either passed down through parents or self-taught.

In 1956, the National Council for Vocational Training (NCVT) introduced support for school-leavers and workers. Ever since, the NCVT has been responsible for developing standards for handicraftsman training, advising the government, undertaking the All India Trade Test, and distributing National Trade Certificates. The aim of the initiative was to design a framework for competency development at all levels and to refine the framework to lower the discrepancies between vocational education and the private sector. The Central Apex Committee and State Committees represent the private sector in this design process and are responsible for implementing the program.

A new approach was initiated in 2007, when the DGET established the "Modular Employable Skills (MES)" program as part of the Skill Development Initiative (SDI) under the MoLE. The aim of MES is to provide short-term modules offered by the private and state training institutions. In contrast to other VET programs, the focus of the MES is more on defined skills rather than on a defined duration. By 2013, 1.4 million people in 60 sectors had been educated in 1,400 modules. The aim of the MES is to meet the demand of the industry by training 1 million people by 2018. Besides the MHRD initiatives, there are other central government ministries[40] that have started their own programs to resolve the competency deficits in the informal sector. (Renold & Probst, 2016)

3.2 Professional Education and Training (PET; Post-Secondary Level)

PET programmes at the tertiary level are provided by polytechnics and take two to three years to complete. Students must have successfully completed higher/senior secondary education in order to enrol in courses offered by polytechnics. (UNESCO, 2011b)

[40] The following central government ministries are trying to contribute programmes, which aim at solving the competence deficit in the informal sector: Ministry of Textiles, Ministry of Woman and Child Development, Ministry of Tourism, Ministry of Health and Family Welfare, Ministry of Agriculture, Ministry of Micro, Small and Medium Enterprises, Ministry of Urban Development.

Additionally, the Advanced Vocational Training Scheme was implemented in 1977 by the DGT with the aim of training highly skilled workers and technicians in a variety of advanced vocational skills not available in other programs.

3.3 Regulatory and Institutional Framework of the VPET System

3.3.1 Key Actors

a) Vocational Education and Training

Government

The central and state governments share responsibility for the education system. The main actors involved in the organization of the VET system at the central government level are the Ministry of Human Resources and Development (MHRD) (which includes the Department of School Education and Literacy and the Department of Higher Education), the National Skills Development Corporation (NSDC), and the All India Council for Technical Education (AICTE). While the MHRD controls the VET system, the responsibilities of the NSDC and the AICTE are to support the development of skills (especially in the informal sector) and to coordinate vocational education at a national level, respectively. In total, 17 ministries are responsible for the administration of VET programs (Renold & Probst, 2016; Agrawal, 2013).

The implementation of the VET system is the responsibility of the state governments. Various state authorities are involved in the provision and organization of the VET system. Each state's State Council for Technical Education (SCTE) plays a key role in managing vocational education regionally (Goel, 2009; Renold & Probst, 2016).

Given the multitude of actors at the central and state levels, the allocation of responsibilities within the VET system varies greatly between states (OECD, 2011).

Sector Skill Councils (SSCs) are set up as autonomous industry-led bodies for steering skill development and training. They create occupational standards, develop competency frameworks, conduct teacher training programs, affiliate vocational training institutes, conduct skill gap studies, contribute to a labor market information system and, most importantly, assess and certify trainees on the curriculum aligned to the SSC-developed National Occupational Standards. (MSDE, 2017)

Representative and advisory bodies

The main representative and advisory bodies are the National Council for Vocational Training (NCVT) and the State Councils for Vocational Training (SCVT). Both councils are associations of different trades (ITI Nathusari Chopta, 2012). While the NCVT is only active at the central

government level, the SCVTs advise both central and state governments. The NCVT and the SCVTs are responsible for consulting “on curricula, standards [and] affiliation. (…) [They] also conduct exams to provide the National Trade Certificate and National Apprentice Certificates” (Kumar, 2016, p. 6).

Education and training providers

As discussed in Section 3.1.2, education and training providers include ITIs, ITCs, BTCs, RICs and polytechnics.

3.4 Educational Finance of the VPET System

The Indian VET system, like the general education system, is financed by the state. Data on the finance of education has limited availability, but it suggests that the annual expenditures for the VET system amount to around $290 million (Abrahart et al., 2008; Renold & Probst, 2016).

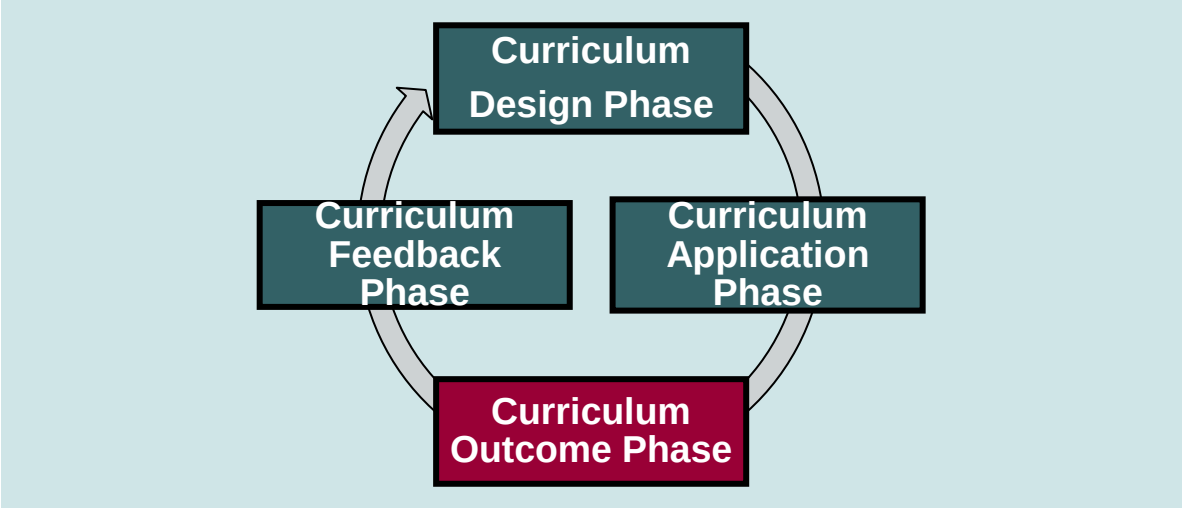
Problems with the financing of the VET system include a lack of transparency and effectiveness. The current model of financing is ineffective, as the state guarantees funding for all VET institutions regardless of their performance. As a result, all institutions are treated equally and those that perform poorly receive the same amount of money as the successful institutions (Abrahart et al., 2008; Renold & Probst, 2016).

A further problem is the lack of investments by private companies. Firms can currently benefit from the VET system without supporting it by running VET schools or without spending money for getting a trained workforce. Public-private partnerships are regarded as a possible way to address this problem (Mehrotra et al., 2014a; 2014b).

3.5 Curriculum Development

The curriculum is a central element for the functioning of a VPET system by defining the framework and the (quality) standards for the education system. The development of a curriculum can be decomposed into a three-step process with a curriculum design, a curriculum application and a curriculum feedback phase. This theoretical concept is called the Curriculum Value Chain and is depicted in the picture below (CVC; for more details see (Bolli, et al., 2016)).

Figure 5: Curriculum Value Chain (CVC)



Source: (Bolli, et al., 2016)

In the curriculum design phase, VET curriculum content and qualification standards are decided upon by the relevant actors. Therefore, the discussion in the respective subchapter below focuses on the degree and the amount of stakeholder participation concerning curriculum design in India. The curriculum application phase revolves around the implementation of the curriculum. Because learning environments differ heavily across countries—especially with respect to the prevalence of workplace learning—the curriculum application phase subchapter in this Factbook focuses those learning environments. Specifically, it addresses where learning takes place and whether the curriculum dictates both school and workplace learning or only one of the two. Finally, curriculum outcomes can be collected and analyzed in the curriculum feedback phase. This evaluation process is important as it may render a more refined curriculum design than was possible in the first place.

In India, the entire curriculum development is dominated by the government, with the MHRD and the MoLE playing key roles. The private sector is hardly involved in the development of VET curricula, as there is no institutionalized cooperation between public and private actors. Furthermore, coordination between the two ministries is often insufficient (Mehrotra et al., 2014a; 2014b).

3.5.1 Curriculum Design Phase

The design phase is crucial for the whole curriculum process. In order to ensure that the skills taught in the VPET programs correspond to the needs of the labor market, experts from companies should be involved in defining the qualification standards and learning contents of the curricula.

The governmental-run MHRD is responsible for designing curricula and preparing modules. Other stakeholders, such as private companies, do not participate and there is no consultation regarding the contents and standards of VET curricula (Mehrotra et al., 2014a).

Within the MHRD, the AICTE and the NCERT are commissioned to prepare curricula and standardize them. Responsibility for vocational higher education curricula lies with the AICTE, while the NCERT oversees vocational education at the secondary school level (Mehrotra et al., 2014b).

3.5.2 Curriculum Application Phase

The way in which a curriculum is implemented—especially with respect to learning environments—is important to achieve the intended learning outcome.

As described in section 3.1.1, VET programs in India are largely school-based, although work-based components also exist.

3.5.3 Curriculum Feedback Phase

The curriculum feedback phase deals with the question, whether and how educational outcomes are analyzed. Based on this, the curriculum could be re-worked and improved.

Different actors are responsible for monitoring India's VET system, namely the MoLE, the NCVET, and the AICTE (within the MHRD). Beyond quality assurance, the AICTE is also responsible for the accreditation of VET programs and institutions. (Mehrotra et al., 2014a; 2014b; Renold & Probst, 2016)

In 2009, the Prime Minister's National Council on Skill Development was established. Since June 2013, this body is known as the National Skills Development Agency (NSDA). The NSDA coordinates and harmonizes the skill development process. Furthermore, it facilitates cooperation between the state and private actors in order to align VET programs with the skill needs of the labor market. Finally, the NSDA is also expected to support the formation of new professional certifying bodies to supplement the existing ones (Mehrotra et al., 2014a; 2014b).

3.6 Supplying Personnel for the VPET System (Teacher Education)

VET teachers are required to hold a Master's degree, meaning the educational pathways of VET teachers are very similar to those of general secondary school teachers. Many teachers of vocational subjects also teach general subjects and part-time teachers are sometimes hired to teach courses that take place on an irregular basis. The appointment of the part-time teachers is typically based on their practical experience in the respective field (World Bank, 2006).

While no detailed data on the number of VET teachers is available, pupil-teacher ratios in vocational schools are generally regarded as very high (a lot of students per teacher). However, they vary strongly with respect to the geographical region and the type of school (World Bank, 2006).

In general, the quality of the Indian VET system suffers from a shortage of teachers. Moreover, teachers usually have little to no practical experience in their fields. This impairs the quality of the instruction in these programs and is one reason why the VET system does not meet the needs of the labor market (Mehrotra et al., 2014a; World Bank, 2006).

The fact that vocational schools are unable to attract quality teachers is regarded as one of the major problems of the system. One reason for this is the relatively low payment of VET teachers, while another one is the low social status of vocational education and training (Goel, 2009; Pillay & Ninan, 2014).

4. Major Reforms in the Past and Challenges for the Future

4.1 Major reforms

In 2009, the MHRD launched the National Mission for Secondary Education, which is part of the Twelfth Five Year Plan (2012-2017). It is the first major reform that affects the VET system since the formulation of the NPE in 1986. With this reform, the government mainly attempts to increase access to and quality of secondary education programs. Regarding the VET system, the objectives of the reform are the following (UNEVOC, 2015, p. 15):

- *"Strengthening existing and establishing new TVET institutions;*
- *Provide in-service teacher training lasting seven days to existing teachers;*
- *Develop 30-day inductions courses for new teachers;*
- *Support private TVET institutions and nongovernment organizations in the provision of non-formal TVET initiatives by establishing Public-Private Partnerships (PPP);*
- *Enhance TVET programs by developing competency-based modules; and*
- *Ensure that education institutions revise their curricula every three years in accordance with the needs of the labor market."*

4.2 Major challenges

According to the MoLE, the major challenges concerning the VET system include the following (UNEVOC, 2015, p. 15):

- *"Increase the capacity and capacity building capabilities of institutions to ensure equitable access to TVET for all;*
- *Promote lifelong learning, and maintain and improve TVET programs according to the needs of the labor market;*

- *Develop effective convergence on matters regarding skills development between schools, ministries, and private sector stakeholders;*
- *Enhance quality assurance mechanisms in TVET institutions;*
- *Develop institutional mechanisms for research development, examinations and*
- *Certifications, and accreditation procedures; and*
- *Encourage the participation of stakeholders in providing and funding TVET initiatives."*

In a report on the Indian VET system, Symbiosis (2011) points out different challenges the system faces. They include the high dropout rate at the secondary level, the lack of basic academic skills of VET graduates and the fact that the VET system is expanding while the current problems remain unsolved. Regarding the political challenges faced by the VET system, Symbiosis mentions rigid regulations, the lack of private and industry participation, and the absence of a clear strategy that would lead to certifications in the informal sector. (Symbiosis, 2011)

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