1. Key development issues and rationale for Bank involvement

Country/Province Context

1. Located at the southwest side of China bordering Laos, Myanmar, and Vietnam, Yunnan is a medium size Chinese province with a population of 45 million, 30 million of which reside in rural and 15 million in urban areas. 84% of Yunnan’s land mass is mountainous. Yunnan is considered the third poorest provinces in China (next to Guizhou and Gansu) with rural per capita GDP of less than US$500 in 2009. More than 10% or 5.4 million of its population is poor. Yunnan further distinguishes itself from the other Chinese provinces in that only 66% of the Yunnan population is ethnic Han. The remaining one third of the population, or 15 million, is of other 26 ethnic groups. Yunnan has a very unique combination of being a border, largely rural, mountainous, with one third of its population being ethnic minorities, and contains more than 10% of total poor population in China.

2. As in the rest of China, Yunnan’s economy has been growing at an incredible speed over the last three decades. The total GDP increased from RMB84 billion in 1980 to more than RMB6168 billion in 2009 and RMB7220 billion in 2010. Yunnan’s pillar industries in bio-industry, tourism, geology and mineral, and energy sectors contribute more than half of the total GDP in Yunnan. In the 12th Five-year Plan period of 2010 to 2015, the government plans to at least double the total value added of these sectors to the overall GDP. The structure of its economy is also undergoing fundamental transformation. In 1980, 43% of the GDP was
contributed by the primary sector. By 2010, the contribution of the primary industry was only 15% and the other 85% came from secondary and tertiary industries.

3. As Yunnan’s urbanization continues and the economic development pattern shifts towards higher value added sectors, the skills demanded will likely change and bottlenecks will become more evident, constraining growth. To date, more than 65% of Yunnan’s 26 million active labor force is still engaged in the primary sector. On the other hand, data from the quarterly labor force surveys indicate that the demand for labor in the secondary and tertiary industry and in the pillar sectors continues to increase and is not yet met. For example, in the second quarter of 2010, there were a total of 179,250 job vacancies but there were only 140,021 applicants. New job vacancies are mainly in the areas of hotel and restaurant (20%), manufacturing (17%), construction (13%), whole sale and retail (12%). There were also structural mismatches in the demand and supply of skills. Only half of the positions were filled.

Sectoral and Institutional Context

4. Over the past decades, Yunnan expanded access to 9 years of basic education to nearly all its population and is rapidly increasing access to secondary and tertiary education. Gross enrolment ratios in senior secondary education increased to almost 60% and that of tertiary education increased to 18% in 2010. In recognition of the critical role the education and training plays in the successful shifting of economic development pattern and in sustaining the economic and social development, the Chinese State Council this year approved the Chinese Medium and Long Term Education Development Plan Outline and also a Talent Development Plan Outline. The two plans not only set ambitious targets in education and training by 2020 (e.g. to reach 90% and 40% respectively for secondary and tertiary GERs and to increase the overall talent pool (roughly defined as population with tertiary education) from 114 million to 180 million) but also establish main direction of education reform. Yunnan Province adopted the same targets.

5. The expansion of the secondary and tertiary education implies expansion in the technical and vocational education. The Plans and other policy guidelines explicitly call for “TVET and general education be of similar scale in both secondary and tertiary education”. Indeed, almost half of the enrollment in secondary and tertiary education is in the technical and vocational track and this ratio is expected to be maintained during the Plan period.

6. In the formal Chinese education system, the technical and vocational track (as opposed to the general academic track) becomes available at the junior secondary level after 6 years of primary education and continues to be offered at senior secondary and tertiary levels. It is increasingly rare for students to proceed to junior vocational schools after primary. Most would complete the 9 year basic education and then choose an academic, vocational, or technical secondary school, each typically requiring 3 years. The Ministry of Education (MOE) through local departments of education offers regular secondary schools, mainly for those continuing to higher education, and specialized vocational secondary education for those planning to enter employment. The Ministry of Human Resources and Social Security (MHRSS) through its local departments and other administrative bodies also offer technical secondary education in skilled workers schools.
7. Thus, formal vocational and technical education\(^1\) in Yunnan is offered at four different levels of schooling: junior secondary, senior secondary, tertiary and adult TVET (Table 1). The majority of TVET concentrates at the senior secondary and tertiary level. In 2010, there were more than 300 secondary and 51 tertiary TVET institutions in Yunnan, enrolling respectively 663,400 secondary and 183,300 tertiary students. About 10-12\% of the total TVET enrollment is in private institutions. Increasingly, these formal TVET institutions offer training programs targeting at the rural unskilled and urban migrant workers.

### Table 1: Yunnan Formal Technical and Vocational Education and Training in 2010

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Type of Institutions</th>
<th>Number of Institutions</th>
<th>Enrollment (1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior Secondary</td>
<td>Junior Vocational Schools</td>
<td>14</td>
<td>6900</td>
</tr>
<tr>
<td><strong>Senior Secondary</strong></td>
<td>Specialized Secondary</td>
<td>91</td>
<td>290,000</td>
</tr>
<tr>
<td></td>
<td>Skilled Workers Schools</td>
<td>36</td>
<td>93,800</td>
</tr>
<tr>
<td></td>
<td>Vocational High schools</td>
<td>184</td>
<td>279,600</td>
</tr>
<tr>
<td><strong>Tertiary</strong></td>
<td>Tertiary Specialized Colleges</td>
<td>35</td>
<td>183,300</td>
</tr>
<tr>
<td></td>
<td>Tertiary Technical and Vocational Colleges</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Adult Education</td>
<td></td>
<td>134</td>
<td>7800</td>
</tr>
</tbody>
</table>

8. While Yunnan has significantly improved access to education and training and plans to continue efforts to meet the targets set in the Medium and Long Term Education Development Plan Outline, serious issues remain affecting the quality and relevance of the vocational and technical education and training available, both at the system and at the institutional level.

9. Government financing for education and training in China is low by international standards at 3\% of GDP while OECD spending averages 5.8\%. Local governments cover more than 80\% of public spending on education. The 20\% from the central government is primarily for the 9-year basic education and other special projects. Private spending by households and businesses reaches up to 40\% of the cost of education and training, which is twice that spent in other countries. Vocational and technical education is the responsibility of local governments. Central government funding for TVET is very limited and only for special projects for selected key institutions. For most of the TVET institutions, financing has been inadequate for needed improvements in faculty, curriculum, pedagogy, equipment, and facilities.

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\(^1\) There are more than 10,000 non-formal technical and vocational education and training which offer non-degree training programs to more than 3 million trainees per year.
10. In Yunnan, the average enrollment in secondary TVET institution increased to 1,416, but the enrollment increase was not matched with improvement in education hardware and software causing lack of qualified teachers and overcrowding. TVET tends to be more expensive than general education on per student basis due to higher demand for equipment and other facilities. However, public expenditure per secondary TVET student in Yunnan was low and similar to that of a general secondary student of RMB700 (about US$110). On average the student teacher ratio in a general senior secondary school is 17:1, but the same ratio is much higher on average in a secondary TVET institution 24:1. The low level of expenditure per student in TVET schools seriously eroded the school’s capacity to provide quality instructor, up to date curriculum, modern teaching and learning facilities necessary for quality TVET education.

11. The multiple administrative bodies for the TVET institutions result in varying funding mechanisms and inequitable funding standards. Specialized secondary schools and the Skilled Workers’ Schools in 2010 began to be funded based on per student allocation. However, those that are directly managed by the provincial departments tend to have a higher level of per student funding than those that are managed by the county governments. The Vocational High Schools managed by the county governments remain funded by historical inputs and are subject to fluctuations in year to year local finances. They tend to have the lowest per student allocation especially in poor counties with weak local revenues.

12. **School Industry Collaboration** Key elements of a demand-driven education and training system include a governance and management structure that would systematically incorporate industry representation at the system as well as institutional levels. The TVET institutions across China and in Yunnan have indeed various collaborations with enterprises. However, these collaborations tend to be based only on individual idiosyncratic efforts without system and legal assurance. TVET institutions are officially managed by a myriad of government agencies and their local departments, including the Ministry of Education, the Ministry of Human Resources and Social Security, and other line ministries such as transportation, health, and urban construction. There is no single central agency that is responsible for the TVET affairs and can also represent the economic and industrial sectors.

13. Schools themselves are managed by heads of institutions appointed by various administrative bodies. Private TVET institutions are legally required to have a school board with various representations including the private sector. However, the public TVET institutions are not legally permitted to establish boards. To respond to the demand from industry, some schools start to experiment with governance and management models including school industry advisory or consultative committee; and to start signing contracts with enterprises in the areas of graduate employment, teacher training, equipment donation, and bringing factory into school for training as well as production. In general, the school industry linkage is still nascent. On the one hand, school capacity for planning and management to strengthen the linkage of schools and industry is weak; on the other hand, there is a lack of incentive, culture, or legal framework for industries to provide systematic and sustained inputs to the management of TVET schools. In the case of industrial attachment, not all industry settings allow such student attachments due to the cost of simulating various production problems for training in a real time production setting, and in other cases, the cost of downtime for production equipment inhibits training. School enterprise
collaboration in such an environment is not institutionalized and unlikely to be sustained in the long run.

14. **Competency-based Standards and Curriculum** can be further improved. Another key element of a demand-driven system is the content of curriculum materials and the methodology by which these materials are developed. Across all types of TVET programs, there is a lack of competency based standards as the basis for curriculum development. Vocational schools under the Ministry of Human Resources and Social Security are required to use standards developed by MHRSS. However, these standards are widely considered of too low quality, out of date, and no longer reflect the requirements of the ever evolving labor market. The Ministry of Education issued a separate set of standards for TVET subjects in MOE schools, but experts regard them as overly theoretical and do not reflect the real competencies of skilled workers. These standards have been developed with little inputs from the industries and are desperate in need for an update, seriously compromising the relevance and quality of the education and training.

15. Vocational and technical schools in China are being stretched to keep their training up to date and matching the competencies sought by industry. Where possible, schools are engaging industry in helping set competency standards and providing students with experience in industry through attachments of up to one year duration. This is observed in a number of vocational and technical schools, in particular those key schools that over the past years have benefitted from central government or donor special projects in TVET which tends to emphasize curriculum reform. The majority of TVET institutions, however, will need to revise its curriculum based on updated standards from the industries.

16. **Quality of Instruction and Instructors** needs to be upgraded. Teaching and learning observed in schools emphasize the instructor as a lecturer providing knowledge of theory, but little practice on actual equipment and experience with production problems in a modern industry setting. Instructors also need theory and practical skills upgraded. Few instructors have both the necessary pedagogical skills and the technical skills needed to help students learn the use of new technologies. Enterprises are searching for workers with experience in working in teams and problem solving, using newer production technologies, and practicing good communications skills. While demand for workers is strong in China and placement rates for graduates are high, 90% in many schools, schools are being faced with the need to reinvent themselves and their approach to training workers for the demands of new industries and for older industries upgrading production technologies to meet competition. Older instructional equipment such as hand lathes and personal computers are giving way to CAD/CAM equipment, robotics, and modern computers running graphics software. The classroom is changing to become a model factory providing the necessary instruction in theory and practice.
17. The objective of the proposed project is fully consistent with the Country Partnership Strategy for 2006-2010 (Report No. 35435-CN), approved by the Board on May 23, 2006. It directly supports Pillar 5 of the Country Partnership Strategy for China, i.e. improving public and market institutions. The proposed reforms and the capturing of lessons from the experience will create public goods and improve performance and accountability of the TVET system through a shift in focus to learning outcomes established by industry rather than inputs such as classrooms, workshops, instructors, and courses offered. The project also contributes to Pillar 2 of the CPS by reducing poverty, inequality, and social exclusion.

18. The World Bank has a long record of investing in vocational and technical education and training (TVET), going back to 1963. The knowledge and lessons from this provide a rationale for involvement in this sector along with the experience gained from the earlier China TVET projects including the Vocational Education Project I, Vocational Education Project II, and the Labor Market Development Project. These projects closed successfully before 2005. Since 2009, there has been a new generation of TVET projects providing direct support to provinces interested in pursuing school based reforms. These include the Guangdong Technical and Vocational Education Project; and the Liaoning and Shandong Technical and Vocational Education Project, both of which are under implementation. Progress to date indicates that sub-national lending tend to result in more focused and efficient policy dialogue and project implementation, in particular in situations where there is a good national policy framework and the government is looking for provincial “good practice” cases. The Bank is able to fill an important gap by initially introducing international experience and innovation in school-based reforms, spreading such reforms within and without project provinces, and support learning activities to capture the lessons from these innovations and inform government policies and investments in the sector.

19. Yunnan is the first western province that was approved by the Ministry of Finance and National Development and Reform Commission to receive World Bank loan for piloting new approaches in technical and vocational education. The Bank’s engagement in TVET in Yunnan will support TVET reforms in the 9 secondary and tertiary TVET institutions (including two county level Vocational High Schools), help produce more and relevant quality skills badly needed by the economy and contribute to the development of Yunnan’s economy during the 12th Five-Year Plan period. It would improve the quality and relevance of training offered by strengthening capacity for delivery of a modular, Competency-Based Training (CBT) curriculum that connects the curriculum more closely with competencies sought by industry and shifts the instructional model from a teacher to a learner-centered approach. The Bank will bring international and national experiences and contribute to the design of a monitoring and evaluation program to capture the lessons and impact of the investment.

2. Proposed objective(s)

20. The Project’s Development Objective is: through curriculum cluster development, improve the quality of technical and vocational education and training, to produce skills that
respond to the labor market demand, contributing to Yunnan’s economic development during the 12th Five Year Plan.

3. Preliminary description

21. The project will have two main components: (i) school-based reform; and (ii) provincial level coordination, policy development, and monitoring and evaluation activities.

22. Component One: School-Based Reforms and Innovations. This component will: (i) strengthen and institutionalize the linkage between schools and industry; (ii) introduce an updated modular and Competency-Based Training (CBT) curriculum; (iii) train instructors and managers to use the new curriculum; (iv) improve student assessment; (v) expand and upgrade facilities and equipment including construction of training centers; and (vi) support non-project school reforms (DALI only). CBT specialties will be developed for the four curriculum clusters corresponding to bio-industry, geology and minerals, tourism, and automobile. One school will be selected to lead the standards and curriculum development for each cluster. The Provincial Project Management Offices will play an important role in coordinating activities such as capacity building for management and instructors, developing guidelines for school-industry committees, and preparing templates for monitoring project performance in order to achieve uniformity where this is important and realize cost savings. However, each project school will develop and implement its own school-based curriculum materials.

23. Component Two: Provincial Coordination, Policy Development, and Project Management. This component will support: (i) support provincial activities related to the development of curriculum cluster; (ii) evidence-based policy research and knowledge sharing; (iii) project management and coordination including monitoring and evaluation.

4. Safeguard policies that might apply

Environmental Assessment (OP/BP4.01)

5. Tentative financing

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<td>Borrower</td>
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<tr>
<td>International Bank for Reconstruction and Development</td>
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<td><strong>Total</strong></td>
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6. Contact point

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