Industrial Development Perspective Plan: Vision 2020

Project NC/NEP/00/009

Strategy Paper


Kathmandu
September 2002
This paper is intended as a white paper on industrial strategy, for the benefit of decision-makers in HMG/N’s Ministry of Industry and National Planning Commission. It circumscribes the major constraints hindering Nepal’s industrial progress in the medium-term, identifies growth prospects, and spells out a five-pronged action plan to turn future challenges into opportunities.

This *Strategy Paper* derives much of its argument from the *Analytical Report* of the Industrial Development Perspective Plan to produce a deliberately concise, action-oriented document. Shafiq Dhanani prepared the *Strategy Paper*, while the *Analytical Report* mobilized a large team of experts comprising, on the Nepali side, Binod Karmacharya (National Team Leader), Shyam Upadhyaya, Vikash Satyal, Lok Sharma, Dileep Adhikary, Girish Pant, Pushkar Bajracharya, Ramesh Maskey, Prakash Silwal, Dinesh Devkota, and Sanjaya Acharya and, on the foreign side, Peter de Valk (Chief Technical Advisor), Mikael Brenning, Shafiq Dhanani, Chandra Athukorala and Kishor Sharma.

The team gathered again in Kathmandu during August 26-30 for a series of consultations before finalizing the IDPP document. The many comments received along the way are gratefully acknowledged, as is the inspired guidance of MOICS and NPC throughout the exercise.

*Kathmandu, September 2002*
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1. Why Nepal Needs a New Manufacturing Strategy

1.1. Introduction

Nepal needs a new manufacturing strategy because manufacturing growth in the past, though rapid, has not exercised a major impact on poverty reduction. Poverty incidence has remained stubbornly high at 42 per cent of the population in the last three decades. A new poverty-oriented strategy, which emphasizes domestic linkages and the development of small and medium scale industries, has the potential to generate widespread employment in the manufacturing sector as well as in agriculture, trade, transport and supporting services, and consequently improve the living standards of large sections of the population in urban and rural areas.

Apart from rising to the poverty challenge, a new manufacturing strategy is needed to face four emerging challenges—all stemming from the gradual erosion of the country’s industrial competitiveness in an increasingly open trading environment. First, the growth rate of the manufacturing sector has been quite uneven in the past then years and, moreover, has slowed down considerably since the early 1990s, even posting negative growth in 2000/01. Second, with rapid globalization and trade liberalization, Nepal is facing increasingly stiff competition in its traditional export markets and products, while its domestic firms are competing against increasing inflows of imported manufactures. Foreign exchange earnings of the tourism sector have declined, putting additional pressure on the manufacturing sector to boost next export earnings. Third, Nepal’s traditional exports are losing share in the world market, and the world demand for its exports is stagnating or declining. And fourth, Nepal’s industrial structure, already at odds with its long-term comparative advantage, is facing renewed pressure from the impact of trade liberalization on its ailing industries. In addition to these four main emerging challenges, the manufacturing sector suffers from many long-standing weaknesses, including poor investment climate and business environment, inadequate physical infrastructure, underdeveloped industrial technology development system and low skills and education levels. These weaknesses continue to constrain manufacturing investment, but have not been adequately addressed in the past.

Is a manufacturing strategy needed at all? While trade reforms and transparency are necessary to address the immediate, short-term constraints of the manufacturing sector, they are not sufficient by themselves to lead to the rapid and sustained development of the manufacturing sector. Because of numerous market failures facing domestic firms in developing their technical and managerial capabilities (including information acquisition, skills upgrading and technology development), progress will not evolve naturally in the context of Nepal’s present endowments and policy framework, or in the international context of stiff competition in the globalized market place. While necessary, the role of government should nevertheless be focused, and only intervene in areas where it can be most effective.

Nepal will be increasingly unable to rely on a regulatory approach and policy tools used in the past to spur manufacturing growth, such as promoting a narrow range of exports based on largely imported inputs, e.g., carpets and garments, and tariffs and bans to protect domestic firms. The changing international environment, which places pressure on all parties to liberalize trade and investment regimes, calls for a more creative and innovative strategy, relying on close public-private partnerships to enhance the productive and transaction efficiency of manufacturing firms, to diversify export products and markets, to create a conducive business environment, to invest in the necessary physical infrastructure, and to
develop industrial technology at the firm level in order to raise the technical and managerial capabilities of domestic industrial firms. Above all, it should recognize that it is firms that compete on domestic and international markets, and that public policy needs to fortify the competitive capabilities of firms.

The manufacturing sector already accounts for most of the country’s export. Its success is crucial to the country’s prosperity, now and in the future. In recent years, the manufacturing sector has faced difficult trading conditions, the result of the global downturn and global competition. However, Nepal has opportunities too. It has one of the lowest wage rates in Asia, and can attract foreign direct investment. It boasts diverse climatic conditions, abundant water resources and hydropower potential, and a strategic location between China and India. There is much that the government and industry can do take advantage of these opportunities.

On the basis of a comprehensive assessment of the manufacturing sector undertaken in 2001, and contained in the Industrial Development Perspective Plan, Analytical Report (IDPP), this paper identifies five key components of a strategy for manufacturing success. Each of these requires the government and industry to determine the actions that must be taken to build on the country’s strengths and remedy its weaknesses. The aim of the manufacturing strategy is to help more manufacturers to produce efficiently, to compete in the international market, to fight competition in the domestic market, and to raise their innovative capabilities and diversify markets by identifying future market niches.

This paper puts forward a strategy for helping manufacturing firms fulfil their potential in Nepal. It is the first stage in the process of consultation with the private sector to frame a long-term vision for the manufacturing sector, and to establish public-private implementation mechanisms. This strategy is not designed to be the last word on the subject. It is neither a hard and fast prescription, nor a formula for instant initiatives. Instead, it is offered as the basis for continuing to develop a robust partnership with management, employees and their unions – a partnership based on best practice in industrial strategy and policy formulation that must be effective at the national, regional and sectoral level.

1.2. Reducing Poverty and Expanding Quality Employment

Nepal is a least developed country (LDC) and one of the poorest countries in Asia, with a per capita GDP of US$228 in 2000, compared with US$479 in India, US$432 in Pakistan and US$368 in Bangladesh. An estimated 42 per cent of the population of 24 million lived below the poverty line in 1996 (Economic Survey 2000/01, Ministry of Finance). This proportion has remained unchanged in the past thirty years. With 76 percent of the total workforce employed in the primary sector (Labour Force Survey 1989/99), the main cause of poverty is of course to be traced in low agricultural productivity. However, a significant contributing factor is the relatively underdeveloped state of the country’s manufacturing sector.

The manufacturing sector employed just 6 per cent of the total workforce, according to the 1988/89 survey. Its contribution to GDP was also relatively small, at 9 per cent of the total in 1997, much lower than in neighbouring countries (twice as high in Pakistan, Bangladesh, India, Sri Lanka and Mexico, and about two and half times higher in middle industrial producers Philippines and Indonesia). Nepal’s per capita manufacturing output was lower than that of Bangladesh, a third of that of Pakistan, a fourth of that of its large neighbour India, and a sixth of that of Sri Lanka. Nepal’s level of industrialization was in fact one of the lowest in the world, on par with Tanzania and Nigeria.
Labour productivity in Nepali manufacturing was one of the lowest in Asia and the world, at just $2,000 per employee compared with $4,000 in Sri Lanka and $6,000 in India in 1996-97, according to the 2001 UNIDO industrial statistics database. This was due to two main factors. First, the technological level of Nepal’s manufacturing production was one of the lowest in the world, along with Sri Lanka, with three quarters of its manufacturing production consisting of low-technology labour-intensive industries such as textiles, garments and carpets. Second, the majority of manufacturing workers were employed in labour-intensive small-scale and household enterprises, where value-added per worker was much lower than in larger establishments. Small-scale (10-49 workers per establishments) and very small or micro-enterprises (less than 10 workers) accounted for respectively 12 and 51 per cent of total manufacturing employment, but together produced 28 per cent of total manufacturing value-added. Incomes were particularly low in the latter segment, comparable to those for agricultural workers. On the other hand, medium and large-scale establishments (employing more than 50 workers) accounted for 37 per cent of total manufacturing employment, but produced 72 per cent of total manufacturing value-added.

Nevertheless, Nepal’s manufacturing sector recorded a respectable growth of 6 per cent per annum over the past 15 years, on average (although growth was uneven over the period, and set furthermore on a clear declining trend—see Table 1). It grew more rapidly than other economic sectors, thereby increasing its share in overall GDP. In the future, a rapidly expanding Nepalese manufacturing sector, both in terms of increasing its relative size in the domestic economy, and in terms of raising its productivity level, is crucial to reducing poverty and generating well-paid jobs, and ultimately to the country’s prosperity. Experience in other South and Southeast Asian countries show that, with appropriate policies and strategies in place, the manufacturing sector can be turned into a driving force of economic progress. Given its relatively small manufacturing base and low labour costs, this is certainly achievable provided the country restore law and order, and provide a stable macroeconomic and political environment, and a conducive regulatory and business environment to attract and retain domestic and foreign investment.

1.3. Proposed Long-term Vision for the Nepali Manufacturing Sector

1.3.1. Vision

The Nepalese Government and the private sector work in close partnership to develop a manufacturing sector that:

- Is competitive, innovative and diversified
- Contributes significantly to the country’s gross domestic product and balance of payments
- Generates higher labour incomes and raises the living standards of the general population, thereby contributing significantly to eradicating poverty
- Is environmentally sustainable and pollution free
- Produces goods encompassing increasingly higher value-added activities to offset its natural geographical disadvantages and relative lack of natural resources
- Employs large numbers of increasingly skilled and motivated workers and managers in safe and efficient working conditions
- Has extensive linkages with the rest of the domestic economy, thereby generating increasing numbers of well-paid jobs in agriculture and in supporting service sectors such as design, marketing, logistics, trade, transport and other supporting services.
1.3.2. Goals for 2020

Between now and 2020, the Nepali manufacturing sector will contribute to raising living standards and reducing poverty in the country, and contribute to general economic development, by:

- Growing at an average rate of 10 per cent per annum, and generating additional quality employment
- Raising its contribution to GDP from 10 to 20 per cent by the end of this period, in line with the long-term targets of the Tenth Plan of the National Planning Commission
- Gradually balancing its export and import of manufacturing products to reduce the trade deficit
- Establishing effective public-private partnership and implementation mechanism to guide future manufacturing investments by the private sector, and to provide the necessary physical infrastructure and supporting services
- Exploiting Nepal’s considerable hydropower resources
- Facilitating market-driven manufacturing diversification and deepening of production and exports, and attracting more technology-intensive industries over time, to enable Nepal to identify and develop innovative products to exploit market niches in world trade, by allocating sufficient resources:
  - To develop an educated and skilled labour force, and
  - To increase the technological and management capabilities of manufacturing firms, including the provision of product, market and equipment information, the adoption of quality standards, productivity management and quality control measures, and firm-based technology development.

In addition to the above growth-oriented goals, since poverty is more prevalent in rural areas, while long-term development depends on urban-based industrialization, due to economies of scale, externalities and conglomeration, additional and direct poverty-oriented strategies will include:

- Pursuing a two-pronged industrialization strategy aimed at rural, agro-based industrialization on one hand, and formal urban-based industrial development on the other:
  - Prioritising export-oriented labour-intensive manufacturing industries and tourism-related exotic products, where Nepal already enjoys considerable comparative advantage;
  - Developing agro-industries;
- Promoting higher productivity and incomes in cottage and small-scale industries, which employ the majority of manufacturing workers, with a special emphasis on rural electrification, rural roads and rural telecommunications.
2. Emerging Challenges

2.1. Uneven and Declining Manufacturing Sector Performance

Two features of the Nepali manufacturing sector in the period 1987/88 — 2000/01 stand out: large year-to-year fluctuations, and a general slow-down in growth since the boom years of 1991-1992. The manufacturing growth rate commonly increased or decreased by 10 per cent from one year to the next and, in the process, even posted negative growth rates in several years (1988/89, 1994/95, 1997/98 and 2000/01) immediately preceding or following years of rapid growth (1987/88, 1989/90, 1996/97, 1999/2000, see figure 1a). Annual swings notwithstanding, growth in the manufacturing sector slowed down considerably since the early years of trade liberalization, from 20 per cent per annum on average in 1991-92 to 5 per cent in 1993-97, and just 2 per cent per annum in 1998-01 (figure 1b).

Figure 1: Manufacturing Sector Value-Added, 1986/87 to 2000/01

(a) Annual growth rate       (b) Average growth rate by period

Source: Industrial Development Perspective Plan, Analytical Report, UNIDO, Table 2.5

Following trade reforms and a devaluation of 33 per cent against the US dollar, manufacturing exports grew by 38 per cent per year in 1991-92, spearheading manufacturing growth in that period. In the subsequent 1993-97 period of stable exchange rate, both export growth and manufacturing growth slowed down to 5 per cent per year. Following the 1996 India-Nepal Trade Treaty, exports grew rapidly again starting in 1998/99. They grew by respectively 24 and 45 per cent in 1998/99 and 1999/2000, or by an average of 19 per cent per year in the 1998-2001 period. This was due to the almost overnight appearance of new export products to India, including butter and cheese, processed edible oils, and perfumes and cosmetics, but also Pashmina, as well as the continued growth of traditional garment exports. However, by 2000/01, the exports of these products and garments slowed down considerably, while carpet exports, Nepal’s largest category, continued their long-term decline commenced in 1993/94. At the same time, most non-export sub-sectors, including tobacco, textiles, wood, chemicals, basic metals, fabricated metals and electrical/electronic products experienced negative growth (table 1). As a result of this mixed trends, the manufacturing growth slowed down to just 2 per cent per annum, and even posted in a decline in 2000/01.
### Table 1: Manufacturing Value-added by Sub-sector in Constant Rupees (1984/85 Prices), 1986/87-2000/01

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<td>Food &amp; beverages</td>
<td>616,058</td>
<td>730,888</td>
<td>646,986</td>
<td>844,041</td>
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<td>1,273,020</td>
<td>1,474,235</td>
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<td>12.3%</td>
<td>20.2%</td>
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<td>Tobacco</td>
<td>440,423</td>
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<td>489,689</td>
<td>515,391</td>
<td>503,776</td>
<td>568,542</td>
<td>499,204</td>
<td>538,763</td>
<td>585,248</td>
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<td>-2.5%</td>
<td>-13.2%</td>
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<td>Textiles</td>
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<td>224,415</td>
<td>273,261</td>
<td>314,516</td>
<td>341,876</td>
<td>407,106</td>
<td>381,693</td>
<td>500,237</td>
<td>-3.1%</td>
<td>-5.0%</td>
<td>-19.8%</td>
<td></td>
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<tr>
<td>Pashmina</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>252,849</td>
<td>564,986</td>
<td></td>
<td></td>
<td>11.0%</td>
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<td>Carpets</td>
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<td>8.3%</td>
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<td>Garments</td>
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<td>146,673</td>
<td>121,646</td>
<td>279,850</td>
<td>324,772</td>
<td>465,380</td>
<td>385,954</td>
<td>394,227</td>
<td>358,452</td>
<td>356,643</td>
<td>356,544</td>
<td>404,157</td>
<td>480,925</td>
<td>389,500</td>
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<td>Leather &amp; footwear</td>
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<td>45,677</td>
<td>60,422</td>
<td>123,909</td>
<td>158,802</td>
<td>80,285</td>
<td>53,397</td>
<td>46,520</td>
<td>50,475</td>
<td>49,757</td>
<td>76,748</td>
<td>68,619</td>
<td>54,409</td>
<td>26,732</td>
<td>23,637</td>
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<td>Wood &amp; wood prod.</td>
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<td>30,414</td>
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<td>9,591</td>
<td>70,049</td>
<td>61,520</td>
<td>82,763</td>
<td>78,666</td>
<td>78,620</td>
<td>82,889</td>
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<td>81,586</td>
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<td>59,061</td>
<td>45,067</td>
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<td>18,867</td>
<td>26,186</td>
<td>39,166</td>
<td>50,650</td>
<td>76,780</td>
<td>93,910</td>
<td>106,445</td>
<td>126,781</td>
<td>252,969</td>
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<td>44,633</td>
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<td>41,798</td>
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<td>40,414</td>
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<td>Chemicals</td>
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<td>396,254</td>
<td>464,555</td>
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<td>681,094</td>
<td>494,023</td>
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<td>384,013</td>
<td>432,572</td>
<td>540,285</td>
<td>564,342</td>
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<td>381,323</td>
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<td>Non-met.min.prod.</td>
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<td>188,654</td>
<td>187,737</td>
<td>89,290</td>
<td>145,760</td>
<td>211,646</td>
<td>190,439</td>
<td>206,815</td>
<td>202,962</td>
<td>191,261</td>
<td>400,951</td>
<td>277,679</td>
<td>282,977</td>
<td>291,483</td>
<td>300,980</td>
<td>-4.9%</td>
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<td>Basic metals</td>
<td>105,783</td>
<td>75,527</td>
<td>98,689</td>
<td>98,789</td>
<td>118,833</td>
<td>146,161</td>
<td>149,450</td>
<td>177,957</td>
<td>240,977</td>
<td>234,576</td>
<td>96,172</td>
<td>75,556</td>
<td>80,987</td>
<td>90,786</td>
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<td>Fabricated metal prod.</td>
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<td>65,879</td>
<td>42,181</td>
<td>35,404</td>
<td>46,256</td>
<td>150,654</td>
<td>260,066</td>
<td>236,477</td>
<td>200,813</td>
<td>156,194</td>
<td>292,122</td>
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<td>74,730</td>
<td>42,340</td>
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<td>139,669</td>
<td>112,907</td>
<td>92,009</td>
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<td>Others</td>
<td>49,505</td>
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<td>59,131</td>
<td>62,676</td>
<td>79,309</td>
<td>80,612</td>
<td>89,793</td>
<td>94,198</td>
<td>86,818</td>
<td>91,503</td>
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<td>90,741</td>
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<td>Total</td>
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<td>4,036,274</td>
<td>4,506,289</td>
<td>4,507,245</td>
<td>5,019,690</td>
<td>4,905,410</td>
<td>5,525,318</td>
<td>5,752,091</td>
<td>5,332,889</td>
<td>5,475,880</td>
<td>6,259,060</td>
<td>6,113,258</td>
<td>6.2%</td>
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</table>

**Source:** *Industrial Development Perspective Plan (IDPP)*, Table 2.5 (based on manufacturing censuses 1986/87, 1991/92 & 1996/97, Economic Survey 2001, IDDP Survey, and IDDP calculations.)
2.2. Globalization and Trade Liberalization

2.2.1. Global competition and trade liberalization

Due to rapid globalization and trade liberalization, the Nepali manufacturing sector faces the following challenges and constraints:

- Increasingly stiff competition, in the export markets, from other countries whose international competitiveness has improved;
- Increasing inflows of imported consumer goods due to rapid liberalization;
- Additional pressure on balance of payments due to inflows of imported manufactures;
- Aggressive competition from equally reform-oriented countries for foreign direct investment (FDI);
- Abolition of guaranteed export quota markets, such as the Multi Fibre Agreement (MFA) to be phased out in 2003;
- Increasing pressure to forego tariff measures to promote and protect domestic industries from foreign competition.

2.2.2. Need to increase manufactured exports

Nepal experienced a widening gap between manufacturing imports and exports over the past fifteen years, rising from US$240 to $913 million between 1985 and 1997. Due to a subsequent drop in manufactured imports, the deficit in manufactured goods narrowed to US$460-480 million in 1999 and 2000. Manufacturing trade deficits are not unusual in developing countries, particularly those industrializing rapidly (and importing large amounts of capital equipment, raw materials and components), or those diversifying their economies (and importing capital equipment and consumer goods to support tourism and other foreign-exchange earning sectors). In Nepal’s case, the gap between manufactured exports and imports was widest in the 1994-1998 period, when manufactured exports stagnated while manufactured imports accelerated, due to the import requirements of the rapidly growing tourism sector and expanded foreign aid grants and loans.

![Figure 2: Manufactured Exports and Imports, 1985—2000](source: Economic Survey 2001 (Table 6.2), Ministry of Finance)
Tourism and transfers (remittances and official grants) were the main foreign exchange earners in recent years. The recent security situation has reduced tourist arrivals and corresponding foreign exchange earnings drastically. The challenge is therefore to rapidly increase manufacturing exports to compensate for the loss of tourism foreign exchange earnings. While the country’s exports consisted almost entirely of manufacturing products in 2000, manufacturing export per capita remained one of the lowest in Asia. Due to its low labour costs, abundant hydropower and comparative advantage in the production of tourism-related exotic products, the manufacturing sector has the potential to generate additional foreign exchange, and to lessen the country’s dependence on tourism, remittances and official grants.

2.3. Weak Positioning of traditional Nepal Exports

2.3.1. Declining world share of main Nepali exports

According to data collected by the WTO/UNCTAD International Trade Centre, Nepali exports (excluding to India) grew by some 14 per cent per annum compared with 4 per cent for total world trade in the period 1996-2000. Nevertheless, the market positioning of these exports was relatively weak. Half of Nepal’s export earnings came from product categories which gained world market share, but for which the world demand stagnated or increased less than on average, the so-called ‘achievers in adversity’ (figure 3). Shawls, scarves, and most garment products fell in this category. A further 38 per cent of Nepali exports, including carpets and men’s shirts, belonged to the ‘losers in declining markets’ category, losing world market share in products for which world demand stagnated or declined relative to average. Only 11 per cent of export revenues came from products considered ‘champions’, i.e., products which gained world market share and for which world trade itself grew by more than average. Finally, ‘under-achievers’ constituted the remaining one per cent of export revenues, losing world market shares in expanding products.

In contrast, the exports of ASEAN countries and China were for the most part ‘champions’, including electronic products and other more advanced products. The strategic challenge for Nepal is therefore to increase the manufacturing and export of ‘champions’, that is, products that are dynamic in world trade.
2.3.2. Low technology level of exports

Nepal’s exports, like those of Bangladesh and Pakistan, were almost entirely all manufactured goods. However, most of these exports were labour-intensive products including carpets, textiles and garments for Nepal (92-95 per cent), while technology-intensive and human capital-intensive products accounted for around 5-6 per cent of total exports in 1999 (table 2). In contrast, labour-intensive exports formed only 40-50 per cent of total exports in India, China and Indonesia, around 20 per cent in Thailand, Korea and Taiwan, and less than 10 per cent in Malaysia and Singapore.

Southeast Asian countries’ orientation towards electric and electronic exports offered the added advantage that the demand for such products was growing in the world market, i.e., they were ‘champions’. In contrast, as noted above, the world market for textiles, carpets and garments was either stagnant or falling.

Table 2: Technology Level of Exports of Selected Countries, 1999 (% of total exports)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Exports US$ million</th>
<th>Manufacturing Exports US$ million</th>
<th>Per cent Share in Manufacturing Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Exports</td>
<td>Manufacturing Exports</td>
<td>Resource-intensive</td>
</tr>
<tr>
<td>Nepal</td>
<td>390</td>
<td>380</td>
<td>98</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>5,055</td>
<td>4,683</td>
<td>81</td>
</tr>
<tr>
<td>Pakistan</td>
<td>6,736</td>
<td>6,091</td>
<td>90</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>4,314</td>
<td>3,336</td>
<td>93</td>
</tr>
<tr>
<td>India</td>
<td>34,246</td>
<td>27,722</td>
<td>77</td>
</tr>
<tr>
<td>China</td>
<td>193,384</td>
<td>174,551</td>
<td>90</td>
</tr>
<tr>
<td>Indonesia</td>
<td>46,608</td>
<td>27,178</td>
<td>78</td>
</tr>
<tr>
<td>Thailand</td>
<td>55,934</td>
<td>43,507</td>
<td>83</td>
</tr>
<tr>
<td>Korea</td>
<td>138,100</td>
<td>133,369</td>
<td>83</td>
</tr>
<tr>
<td>Taiwan</td>
<td>117,649</td>
<td>114,142</td>
<td>91</td>
</tr>
<tr>
<td>Philippines</td>
<td>33,736</td>
<td>30,702</td>
<td>97</td>
</tr>
<tr>
<td>Malaysia</td>
<td>82,729</td>
<td>68,567</td>
<td>97</td>
</tr>
<tr>
<td>Singapore</td>
<td>104,528</td>
<td>100,006</td>
<td>96</td>
</tr>
</tbody>
</table>


2.3.3. Reliance on limited number of export products and markets

Nepali exports were limited to a few product categories, consisting mainly of carpets, textiles and garments, and which moreover were sold in a limited number of countries. They were thus quite vulnerable to changes in demand in such countries, as the recent trends in the world demand for woollen carpets illustrates. According to the Carpet and Wool Board, carpet export declined by 25 per cent between 2001 and 2002, while corresponding earnings declined by 30 per cent. This was due to the slump in demand in its largest market Germany, which alone accounted for 60 per cent of total carpet export. Exports to its second and third largest markets USA and Belgium also declined by respectively 8 and 19 per cent. The challenge for the Nepali manufacturing sector is therefore to raise the innovative capacity of domestic firms and diversify markets by identifying future market niches.
2.4. **Industrial Structure Increasingly at Odds with Nepal’s Comparative Advantage**

A major conclusion emerging from the detailed analysis of manufacturing sub-sectors contained in the IDPP analytical report is that considerable capacity has been built up in manufacturing sub-sectors or products which are not in line with the country’s current or near future comparative advantage. Trade liberalization has exacerbated the already precarious position of these industries. The inappropriate industrial structure evolved mainly in the 1970s and 1980s by imposing high protective trade barriers, other government incentives and the establishment of numerous state-owned enterprises. Explicitly or implicitly, a ‘basic industries strategy’ was pursued, a strategy which has largely failed in all developing countries at their early stages of development.

In the late 1980s and early 1990s, the government took measures to liberalize trade, phase out certain sub-sector specific incentives and privatize or liquidate state-owned enterprises. Nevertheless, the overall industrial structure remains insufficiently aligned with the country’s comparative advantage, preserved by high import duties of up to 40 per cent for most products, and the continued presence of large state-owned enterprises. The sub-sectoral analysis revealed that the lack of comparative advantage was due to one or more of the following factors:

- Nepal being a landlocked country;
- some products required large-scale production beyond the reach of Nepal;
- some products required significant investment;
- some products did not require much labour in which Nepal has a comparative advantage;
- lack of critical mass of sufficiently educated staff or skilled workers;
- inadequate infrastructure; and
- inadequate availability or access to raw materials at internationally competitive prices.

Sub-sectors or product categories were considered to lack comparative advantage at present, and which were unlikely to develop it in the foreseeable future included sugar, textiles (excluding Pashmina and carpets), cement, chemicals, plastic products, mechanical engineering and the electrical/electronics sub-sector. However this doesn’t preclude the possibility that Nepal may have a comparative advantage in certain niche products of particular sub-sectors. The share of these sub-sectors or product categories declined from about 40 to 35 per cent of total manufacturing value-added between 1986-87 and 1996/97. This share may still be as high as 20 per cent, due to their dismal performance even in the presence of high trade protection. Rampant smuggling has further eroded the efficiency of this protection. In terms of employment, these industries in 1996-97 employed some 30,000 persons, equivalent to about 15 per cent of formal sector employment.

These are also sub-sectors and product categories characterized by deteriorating technology, low capacity utilization, low productivity and low value-added to output ratios. Aggravating the situation is the fact that production of some goods in Nepal is based entirely on tariff differentials between Nepal and India. The challenge to the government and the industry itself is to restructure the entire manufacturing sector so as to reduce activities in the above-mentioned industries, and release financial and human resources that could be channelled to industries which are more in line with Nepal’s comparative advantage and with brighter commercial prospects. This restructuring will be no doubt be associated with significant financial costs, mainly to the industry, but the longer-term financial and economic benefits to the industry and the society will outweigh these short to medium term financial costs.
3. Long-Standing Weaknesses

3.1. Unfavourable Business Environment

Nepal offers a difficult business environment for manufacturing investment due to the country’s land-locked situation, limited resource endowments, inadequate physical infrastructure, rugged terrain, small and poor population, and the increasing competition from neighbouring India and China. These problems, beyond the country’s immediate control, are however compounded by deteriorating law and order, persistent political instability, government red tape, and restrictive legislation in the key areas of labour, tax and investment. Together they present formidable challenges to rapid industrialization. Nepal must take urgent steps to improve the business climate in aspects under its control.

3.1.1. Political instability and deteriorating law and order

After a brief period of relative stability following the transition to a democratic government in 1991, Nepal has entered into a prolonged period of political instability, witnessing ten governments (including six coalitions) between 1994 and 2001, increased politicization and weakening of public administration and institutions, delayed and often conflicting government policy implementation, increased governance problems, and a marked deterioration of law and order. The latter has culminated in the current emergency related to the Maoist uprising, with obvious implications for domestic and foreign investment flows.

3.1.2. Tariff structure

Starting in the early 1990s, Nepal began a process of simplifying its import and export tariff regime to open its economy to foreign competition and to promote exports. Nevertheless a number of anomalies remain. Nepal maintains a generally lower tariff structure than India, while there is virtually free movement of goods, labour and capital along the 500 mile-long open border between the two countries. This provides unintended incentives for importers to route their imports destined for India via Nepal, draining its foreign exchange reserves, while exporters of Indian products can take advantage of export incentives intended for Nepali goods. Another important side-effect of the differential tax structure has been the encouragement of transitory types of industries in Nepal, in the absence of the provision of rules or origin in terms of value-added requirements, and the misuse of the existing system of certificates of origin.

The trade-weighed nominal rate of protection fell from 80 to 30 per cent between the early 1980s and the mid-1990s, while the average effective rate of protection declined from 97 to 8 per cent in the same period. The import license system was completely abolished by 1993. The simple average import tariff rate is currently 13 per cent. Imported inputs for textiles are exempted, while imported machinery and basic metals benefit from low tariffs. In addition, Nepal provides preferential treatment to imports of India, other SAARC countries, and the Tibet Autonomous Region of China. Nevertheless, some discrepancies remain, such as the import duty of 40 per cent on packaging materials, a major cost for domestic pharmaceutical companies, while imported drugs pay only 2.5 per cent duty.

Export duties were abolished except for a few selected commodities, and so were export
licenses. The bonded warehouse system for imported inputs and raw materials, successfully introduced for the garment industry in the late 1980s, was extended to other exports. On the other hand the duty drawback system, also introduced at around the same time, was not as effective, due to lack of established procedures and guidelines, administration by different tax departments, and inadequate funds for its implementation. In July 2001, the government introduced new measures to improve the duty drawback system.

Nevertheless, some important export restrictions remain which constrain export expansion. The most important of these is the export floor price for carpets, which has been maintained at US$50 and US$60 per square meter of respectively unwashed and washed carpets. Their original purpose was to control foreign currency leakages due to possible under-invoicing, and to maintain quality standards. However, the market price of carpets has steadily declined since 1992, the year when the floor prices were fixed, forcing firms to over-invoice the value of their carpets, and thus making them uncompetitive. Other restrictions include export taxes levied on essential agricultural commodities and selected manufacturing items, and those imposed on a number of commodities prone to re-export to India, such as processed edible oil, vegetable ghee, plastic products and copper wire. In addition, a service fee of 0.5 per cent is levied on all exports. Finally, only 15 per cent of total raw hides can be exported to encourage downstream processing of leather, and wool export is restricted to ensure sufficient supplies of raw materials for the carpet industry. The challenge is to continue rationalizing the import and export tariff regimes to promote further efficiency in domestic industries, and to stimulate exports.

3.2. Government as Regulator rather than Facilitator

3.2.1. Bureaucratic government

Excessive government, delays in the provision of government services, and poor administration of the tax laws impose unnecessary burden on manufacturing firms. Specific problems include the poor delegation of authority, inadequate dissemination of information, lack in clarity, consistency and simplicity of laws and regulations, overly rigid application of rules, and absence of accountability. Such shortcomings have often led to opportunities for arbitrary decisions. The government is stuck in its role of regulator, while it should be a facilitator for manufacturing investment, and to be supportive of industrial firms.

*Tax administration* suffers from tax officials having too much discretion on tax assessments, and the absence of workable system for resolving tax disputes. The newly introduced VAT system has not been accompanied by adequate training of tax officers.

*Customs administration* suffers from five key problems: procedural delays and complicated documentation (an average of 80 documents for export), inaccurate classification of goods (leading to arbitrary decisions, delays and rent-seeking), inaccurate valuation of goods (due in part to the use of reference value rather than invoice value), delays in the duty drawback scheme and VAT refunds (six-month delays are common), lack of enforcement and smuggling (especially due to price differentials with India). All these increase the transaction costs of doing business, and adversely affect the competitiveness of manufacturing firms.

*Government policies and regulations* suffer from frequent changes without prior and adequate consultation with business, including changes in tariff rates and currency regulations, introduction of a five-year income tax holidays for new industries in 1992
followed by its removal, and absence of action on the establishment of export processing zones and export promotion houses.

3.2.2. Restrictive labour legislation and administration

A labour law stipulates that permanent workers cannot be dismissed without prior approval of the Department of Labour, a process which can take months or even years. As a result, some older firms are over-staffed, while other firms have cut down on recruitment of new workers, at least on a permanent basis, as well as encouraging some firms to adopt more equipment-intensive production methods. More often, firms have switched to recruiting temporary and contract workers. Labour regulations have achieved neither their aim of protecting labour, nor attracting investors. In addition, politicization of trade unions has caused industrial disputes in the past.

Several institutions are responsible for labour regulations and administration, including the Department of Labour under the Ministry of Labour, the Central Labour Advisory Committee, the Minimum Remuneration Fixation Committee, the Labour Advisory Board, the Labour Relations Committee and labour courts. Some of these, such as the Labour Advisory Committee, are inactive, while others, such as the Department of Labour, are more involved in skills development programmes. The challenge is therefore to establish a legal environment that does not hamper the employment of labour in the manufacturing sector, and which is supported by clearly defined institutions for dealing with labour relations.

3.2.3. Un-coordinated government agencies

Industrial policies consist of all policies that have an impact on the manufacturing sector. Policies and measures of immediate importance to the competitiveness of the manufacturing firms include macroeconomic policies such as exchange rates and interest rates, law and order, political stability, tariffs, infrastructural policies for power, road, and telecommunication development, education and training policies, labour policies, and many others. Rapid and environmentally sustainable industrial development require that various government policies are well coordinated and effectively implemented by the ministries involved, including the Ministry of Finance, the Ministry of Industry, Commerce, Supplies, the Central Bank, The National Planning Commission, the Ministry of Population and Environment, the Ministry of Agriculture, the Ministry of Forestry and the Ministries responsible for infrastructural development.

A number of coordinating mechanisms have been established to provide efficient services to manufacturing firms and investors, including the One-Window Committee (chaired by DOI and with high-level representation from MOICS, MOF and NRB), the Investment Promotion Board, and the Nepal Trade Promotion Board. However, the desired coordination has not materialized. It is important for the government and the private sector to jointly identify and resolve the constraints faced by these institutions. In particular, the One-Window Committee must be strengthened with representations from land and infrastructural agencies, because the availability of land, power and other infrastructural needs are major bottlenecks for investors.

Another important need is to coordinate tax agencies under Ministry of Finance and DOI, so that tax policies, which are primarily designed to raise revenues, do not discourage manufacturing investment and activity, and so that tax regulations are simplified. Several other institutions have been established to provide support to industrial development.
The Industrial Enterprise Development Institute (IEDI) was established in 1996 to enhance human resources through enterprise, entrepreneurship and managerial training. Its Entrepreneurship Development Centre provides business development services, while managing two other donor-supported projects, the Technology Transfer and Development Project and the Institute for Environmental Support. The National Productivity and Economic Development Centre (NEPDC), affiliated to MOICS, provides the secretariat for the national productivity council. The Industrial Districts Management Company manages the nine industrial estates in different parts of the country, including three in Kathmandu. The Nepal Trade Promotion Board (NTPB), and its Trade Promotion Centre (TPC), was established to promote the expansion and diversification of exports, but the national and sectoral business associations have now overtaken this role.

In addition to duplication, many Committees and Councils carry representations from different ministries and agencies at very senior levels, often the same ones, thus making it difficult for them to schedule meetings regularly. Some of these institutions have clearly outlived their original purpose, and need to be phased out or merged with others.

3.3. Inadequate Physical Infrastructure

A survey undertaken by the Nepali Federation of Chambers of Commerce and Industry (FNCCI) and the World Bank in 2000 revealed the extent of inadequacy of the physical infrastructure in Nepal. Over 70 per cent of firms experienced problems with electricity, and 42 per cent experienced severe problems in this respect (figure 4). About 35 per cent of firms experienced problems with the road network, and 31 per cent experienced problems with water supply. Some 20 per cent experienced problems with telecommunications, while 15 per cent experienced problems with water disposal. These issues in turn are discussed below.

![Figure 4: Share of Surveyed Firms Facing Infrastructural Problems](image)
3.3.1. Electricity

Electricity availability from the grid is the most significant infrastructural problem faced by industrial firms surveyed. As a result, nearly 60 per cent of them supplied their own electricity. Larger firms were relatively more likely to spend their resources on electricity generating equipment, particularly in the chemical, pharmaceutical and metal sub-sectors. Firms experienced cuts and erratic electricity supply during the dry season. Electricity is mainly used in urban areas, covering 16 per cent of the population, while the remaining 84 per cent of rural dwellers do not have access to it, and rely on traditional fuels such as wood, agricultural waste and animal dung. Rural electrification, virtually non-existent at present, would provide the largest impetus to rural industrialization and rural poverty reduction. Hydroelectric plants currently supply around 60 per cent of electricity, while Indian and Nepali private hydropower producers provide 39 per cent of the total to the Nepal Electricity Authority (NEC). The remaining 1 per cent comes from diesel plants.

While the potential demand for electricity for industrial use and domestic consumption far exceeds supply, less than one per cent of potential hydroelectricity capacity has been exploited so far, and this for a number of reasons. First, power planning has been aimed at satisfying domestic consumption, and insufficient consideration given to the needs of industrial users or the potential for power export to India. Neither has it considered the potentially large captive market of new electricity-using industries such as fertilizer plants.

Second, due to poor energy pricing policies, traditional fuels, as well as coal and petroleum, are cheaper than hydroelectricity. The currently energy pricing policy and the large investments required have combined to limit private investor interest in hydropower. Moreover, NEC is the only agency allowed in electricity generation, transmission and distribution in Nepal, private sector involvement being limited to hydropower development. And third, the existence of several government agencies dealing with hydropower development, including the Ministry of Water Resources, the Water and Energy Commission and the Department of Electricity Development, has created confusion and slowed down the implementation of energy plans.

3.3.2. Road and air transport

Road transport services constituted the second most important infrastructural problem in the country after electricity supply, according to the FNCNI-World Bank survey. In the absence of a railway system in this mountainous country (excepted for a 52 km stretch from Janakpur and Jayanajar), most goods are shipped around the country and exported using roads and airfreight. The existing road network, though relatively extensive, is generally inadequate to support a modern manufacturing sector. It consists of narrow, fair-weather roads for the most part, and only a third of the total length is asphalted, while another quarter is gravelled. An important constraint is the absence of a direct link between Kathmandu and India, the major axis for goods and people in both directions. The government lacks the resources to expand and maintain a modern road network, yet it has been too passive in promoting private investment in this area.

Some 20 per cent of firms experienced problems in the existing airfreight services. The latter are not considered a luxury in Nepal, since around 90 per of carpet firms and 85 per cent of garment and pharmaceutical firms used them to meet shipment deadlines. A substantial 60
per cent of textile and metal fabrication firms also used airfreight services, usually through Kathmandu. In a land-locked country with a rugged terrain, airfreight services are very important, yet nearly 50 per cent of garment firms and 82 per cent of fabricated metal firms experienced problems with the services.

3.3.3. Telecommunications

One fifth of the firms in FNCCI-World Bank survey experienced problems with telecommunication services. The demand for telephone lines remains very high. The National Telecommunications Company (NTC) has 230,000 lines in operation, but has 260,000 applications waiting for connection, especially outside Kathmandu. Cellular and satellite communications are relatively recent and expensive.

3.3.4. Water supply

One third of the firms surveyed by FNCCI-World Bank reported problems with water supply, this percentage rising to 58 per cent in Kathmandu. As a result, 71 per cent of firms owned their own water supply. Carpet, garments and textile firms require water in their washing and dyeing processes.

3.3.5. Industrial estates

There are nine industrial estates in the country, including three in Kathmandu. Despite the availability of transport, power, telecommunications and water, many manufacturing firms set up facilities outside these estates for three main reasons. First, land cannot be bought but only leased, and cannot therefore be used a collateral for bank financing. Second, estates have been prone to labour disputes, since problems in one establishment tend to spread to the operation of the whole estate. And third, the physical infrastructure provided in the industrial estates is inadequate, forcing many firms have to deal directly with the service providers.

3.3.6. Summary

Nepal’s physical infrastructure, especially electricity supply, roads, telecommunications and water supply, is inadequate to support a modern manufacturing sector, which is capable of quickly responding to trends in world market demands for manufactured products.

The Inland Container Depots (ICD) or ‘dry port’ currently being built in Birgunj, in combination with the railway link between Raxaul and Birgunj, will ease the movement of goods between Nepal’s border and Calcutta seaport. However, the necessary agreement with India to allow this movement has not been signed yet.

3.4. Low Productivity

3.4.1. Labour productivity

Manufacturing value-added per employee in Nepal stood at US$ 2,000 per annum in 1996-97, one of the lowest in the world (figure 5). It was two thirds of the level of China and half the level of Sri Lanka and India. It was a fifth of that of Poland and Indonesia, and around a tenth of that of Thailand, Philippines and Malaysia. At the high end of industrial producers, labour productivity in Korea and Singapore, at around $40,000 per worker, was about 20 times higher than that of Nepal. The chief reason for this appears to be the low technology, labour-intensive pattern of industrialization in Nepal, especially in small and medium industries, which employed the majority of manufacturing workers, as discussed below.
Nevertheless, Nepal averaged a growth rate in manufacturing labour productivity of 3 per cent per annum between 1986 and 1996. This was similar to the rate of neighbouring India, Pakistan and China, but lower than medium industrial nations such as Indonesia, Thailand, Philippines, Malaysia and Mexico (5-7 per cent).

3.4.2. Labour productivity by establishment size

Manufacturing employment in Nepal grew from 150,000 to nearly 400,000 persons, or by some 18 per cent per year between 1991 and 1996-97, Household and cottage industries accounted for half of total manufacturing employment, but produced just 12 per cent of manufacturing value-added or MVA (figure 6). Small-scale establishments (10-49 workers) accounted for about 12 per cent of employment and produced 16 per cent of MVA. Medium-scale establishments (50-199 workers) employed 19 per cent of the total employment and produced 32 per cent of MVA. Large-scale establishments (above 200 workers) accounted for the remaining 19 per cent of total manufacturing employment, but produced 40 per cent of MVA.
As a result, value-added per worker, or labour productivity, varied by a factor of almost 10 by establishment size, from Rs.15,000 per employee in establishments employing less than 10 workers to Rs.135,000 per employee per year in establishments employing more than 200 workers each. To a large extent, this is due to low technology, and limited availability of equipment. In fact, those engaged in establishments of less than 10 workers each probably had very little equipment to work with, since their labour productivity was of the same magnitude as the average earnings of agricultural workers.\(^1\) The challenge is to promote higher technology and higher investment in equipment in establishments of all sizes, but particularly in the small and medium-sized establishments.

### 3.5. Low-value Manufacturing Production

#### 3.5.1. Low technology level of manufacturing production

To assess and compare the technological capabilities of production in different countries, manufacturing industries can be classified into three categories\(^2\). The first one consists of higher technology industries including pharmaceuticals, chemicals, office and computing equipment, consumer electronics (and parts), communication equipment, motor vehicles and other transport equipment (and parts), and machinery. The second category consists of medium-technology industries including rubber and plastic products, cement, petroleum refinery products, basic metals and simple fabricated metal products. The third category consists of low-technology industries such as food, beverages, tobacco, textiles, carpets, garments, footwear, wood products, furniture and paper and printing.

1. The 1989/99 labour force survey reports monthly earnings of Rs.1,246 for agricultural workers, or Rs.14,952 per year (Central Bureau of Statistics, Table E.6.6.).
2. See Forstner H. (1999), Measure for Measure: Building UNIDO’s System of Industrial Development Indicators (SIDI), Vienna: UNIDO.
According to this classification, the technology level of manufacturing in Nepal was among the lowest in Asia. Around three quarters of the industrial output of Nepal was accounted for by low-technology industries, the highest in Asia with Sri Lanka (75 per cent) in 1997. Furthermore, along with Pakistan and Indonesia, this share remained stable or increased during the 1985-97 period. Though similar data are not available for more recent years, the situation described above may still hold in 2002. This was unlike the experience of most other countries, especially in Southeast Asia, where the production of lower technology industries diminished in importance in favour of higher technology industries.

The share of higher technology industries in Nepal reached 9 per cent in 1997, similar to that of Sri Lanka (8 per cent). This was less than half that of Indonesia and South Africa (20-26 per cent), and a third that of Pakistan and Poland (29-33 per cent). The share of higher technology industries of middle industrial producers Mexico, Thailand and Philippines was four times as high as in Nepal (40-43 per cent), a share matched by India. Higher technology industries accounted for 50-53 per cent in more industrialized Malaysia, Korea and Taiwan, and 70 per cent in Singapore.

Nevertheless the share of higher technology industries rose from 6 to 9 per cent in Nepal, while it stagnated in Sri Lanka in the period 1985-1997. With the exception of Indonesia, which specialized in the production of labour-intensive exports, Southeast Asian countries experienced the fastest structural change in this respect, the share of higher technology industries rising by 15-17 per cent in most cases, and 24 per cent in the case of Thailand. Finally, the share of medium-technology industries including rubber, plastic, cement and basic metals declined slightly from 19 to 17 per cent of total manufacturing value-added. This share, which includes most basic industries, has generally remained quite stable for most countries discussed here.

It should be noted that the simple classification scheme above might overstate technological level and upgrading of some Southeast Asian countries. This is because it does not distinguish between final assembly (using mainly imported components) on one hand, and production using domestic intermediate inputs on the other. Since countries such as Thailand, Philippines and Indonesia rely to a significant extent on imported inputs, particularly in the electronic and motor vehicle industries, much of so-called higher technology industries were in fact relatively simple labour-intensive operations, relying mainly on good quality assembly labour. Nevertheless, in order to attract such industries, these countries also provided security, a stable political and macroeconomic environment, efficient infrastructure, stable labour relations and good trading links in the region, which Nepal should also provide.

3.5.2. Under-developed metal and engineering industries

With respect to the potential for manufacturing goods that are growing rapidly in world trade, it is useful to first look at the share of the metal and engineering industries as a whole in total manufacturing value-added. This share stood at 8 per cent for Nepal in 1997, a figure comparable to Sri Lanka and Bangladesh (6-7 per cent), but much lower than that of Pakistan and India (14 and 27 per cent). This share was in the 20-35 per cent range for middle industrial producers Indonesia, South Africa, Poland, China, Mexico and Thailand, and in the 40-50 per cent range for high industrial producers Taiwan, Korea and Malaysia.

Machinery production. The production of capital goods plays a very special role in industrialization because it engages firms in developing their manufacturing capabilities
through activities such as reverse-engineering and adapting foreign technology to domestic markets, products, conditions and scales of production. They also provide the technological base for further industrial diversification and the deepening of manufacturing production.

In the case of Nepal, the production of machinery was insignificant at 0.1 per cent of manufacturing value-added in 1997. In fact the production of simple fabricated metal products formed the bulk of the production of metal and engineering industries (5 out of 8 per cent). In general, the higher the industrial development of a country, the higher the share of the machinery sub-sector in manufacturing production, reaching 7, 9 and 10 per cent in respectively India, China and Korea.

*Electrical and electronic industries.* The share of electrical and electronic goods stood at 2.5 per cent in 1997 in Nepal, up from 1.2 per cent ten years earlier. In general the higher the industrialization level of a country, the higher the share of electrical and electronic goods produced in that country, though countries such as Malaysia, Thailand and Philippines have specialized relatively more in this sub-sector than most other countries.

*Transport equipment.* Finally, Nepal produced virtually not transport equipment, while this share was in the region of 10 per cent for India and Indonesia, and 14-15 per cent for Korea and Thailand. The link between the production of metal and engineering goods and innovation is discussed below in the context of the industrial technology development system.

### 3.6. Weak Industrial Technology Development System

#### 3.6.1. Ten types of industrial technology acquisition and development

Industrial technology development is not just concerned with research and development (R&D) activities. In fact the latter form a minor component in the range of technological development activities, often accounting for just 20 per cent of total expenditure even in industrialized countries. The remaining 80 per cent are spent on non-R&D activities such as design, engineering, and reverse engineering. One can distinguish ten types of technological activity falling into three groups: (i) technology acquisition; (ii) technology development based on incremental design and engineering activities; (iii) research and development at the international frontier. These three groups consist of the following:

*Technology acquisition:*
- New units of equipment or machinery in existing plants
- New materials and components for existing designs and specifications
- Turn-key plants
- New product technology embodied in existing designs and specifications

*Design and engineering activities:*
- Engineering-based incremental improvement in process technology
- Incremental improvement in product specifications and designs

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3 See Arnold E., Bessant, J. & P. Brimble (2000), Enhancing Policy and Institutional Support for Industrial Technology Development in Thailand: Overall Policy Framework and Development of Industrial Innovation System. Bangkok: National Science and Technology Development Agency (NSTDA) and World Bank. For a seminal paper on the subject, see Lall S. (1989), Building Industrial Competitiveness in Developing Countries, Development Centre, OECD.
• Continuous improvements in logistics and supply chain with existing suppliers
• Design and reverse-engineering, and linkages with new suppliers of equipment and materials

Research and development:
• Technology search and research close to the international frontier
• Technological R&D, plus design and engineering for new products and processes.

The first four types of technology acquisition share the common characteristic that they involve the introduction of standard designs, specifications and machinery already used elsewhere. Industrializing countries such as Nepal acquire rather than develop their technology, and the sources of capital equipment and product technology are usually located in industrialized countries. However, studies suggest that industrial growth relying on technology acquisition only, without some of the other six types of technology development, which typically have to be located in the domestic country, misses out on a very large source of enhanced productivity growth and other forms of competitiveness.

A technologically shallow growth path of industrial growth is one of limited investment by industry in the capabilities required to undertake activities in categories five to eight. Those in categories nine and ten are less important for the majority of industrial firms in Nepal. It is important to stress that the first two groups of activities, technology acquisition and design and engineering development, are rarely substitute for each other, but complementary.

In the current model of technology development of Nepal, industrial firms are considered as the ‘demand side’, while the ‘supply-side’ is provided by technology institutes and universities. In fact, in industrialized countries, industrial firms not only generate the demand for technology, but also account for a very large part of the supply as well. In other words, the vast majority of technology development takes place in industrial firms. They supply much of the new technology they use themselves, especially of types five to ten, and they also supply a very large proportion of the technology used by other firms.

Two areas of technology policy need to be addressed: policy measures to strengthen the capabilities and activities of firms concerned with undertaking their own technology development; and policy measures to strengthen support institutions in undertaking scientific and technological activities for the benefit of industrial firms.

3.6.2. Firm-based technology development

At the current stage of Nepal’s development, the most important thresholds of technological capability that firms need to cross are not concerned with formally organized R&D activities. For most large firms and a few SMIs, they are about building their design and engineering capabilities as a basis for starting significant technology development activities. For the majority of SMIs, especially in the more traditional industries, the most important capability thresholds are concerned with increasing the efficiency with which existing technologies are acquired, used and operated.

Nepal’s industrial technology development system has relied almost exclusively on public institutions as suppliers of technology to industrial firms. In contrast, Korea, Taiwan, Singapore, and to a lesser extent Malaysia, have developed a dual structure which, alongside public institutions, have promoted firms themselves, not just as users of technology and skills, but as creators of technology and generators of skills and capabilities to do so. In these
countries, as well as in more technologically advanced countries, firms now account for the larger proportion of industrial technology development.

However, transition towards a firm-centred structure of technology development does not take place automatically as industry grows. Many industrializing countries have experienced industrial growth for long periods without any significant change in this direction. Substantial demand for technology development at the level of individual firms is needed, even when strong government policies are in place, as in Brazil or India. This demand can be stimulated by at least four factors: competition, effective demand from firms, structure of production and foreign direct investment.

- Competition generates the pressures and opportunities in both the domestic and export markets, and stimulates investment in technology development.

- Most technology suppliers assume that most firms want to change, yet the majority of firms in developing countries do not realize or recognize the need for change and do not know where and what they might improve, as well as firms which may recognize the need for change but are unclear about how to go about it.

- Industries differ in the intensity of their technology development activities. Industries that are growing rapidly in world trade, such as electronics, offer greater opportunities for deepening local technological development capabilities. Domestic manufacturing production of more technologically advanced products and processes is the necessary base, though not sufficient, upon which to build incremental design and engineering changes. Technology development has to be undertaken in close proximity to where production and marketing operations are located.

- In industrialized and increasingly in industrializing countries, the roles and strategies of MNC subsidiaries and joint venture partners seem to be shifting towards a greater localization of technology development activities. When MNC subsidiaries play a technology development role, they can generate spillovers to the rest of the economy. This opens up the potential for linking this process more strongly to local institutions and for increasing the spillovers generated within the economy.

To stimulate firm-based investment in technology, the challenge for Nepal is thus to increase competition, promote effective demand for technology from domestic firms, gradually alter the structure of production towards more technologically advanced products, and ensure technological spillovers from foreign direct investment and linkages between foreign and domestic firms.

### 3.6.3. Public technology institutes

Several institutions have been established to develop industrial technology. The Royal Nepal Academy of Science and Technology (RONAST) was established in 1982 to promote and apply science and technology in all areas of economic development. A Research Centre For Applied Science and Technology (RECAST) also exists. Research laboratories include the Food Research Laboratory, the Forest Survey and Research Laboratory, and the Royal Drug Research Laboratory. Universities also have science and technology research facilities.

In fact there are no less than 42 institutions involved in science and technology. They have had little or no impact in developing practical applications whether in manufacturing or other
sectors to date, because of their government or bureaucratic structure and poor management, lack of vision, lack of adequate resources, lack of coordination and collaboration with other like-minded institutions, and more importantly, lack of clear mandate to provide direct services to manufacturing firms. The public technology development system therefore needs a complete overhaul and streamlining, so that the remaining institutions can be adequately funded, and re-orientated towards serving private sector clients.

3.6.4. Industry associations

Industry associations in Nepal are active in providing market and business information services to their member firms. However, they have not yet taken up the role of technology promoter. For instance, they do not provide technical information and services such as product and process advice, productivity improvement at the plant level, advice on sources and costs of production equipment, and so on. In this era of globalization and trade liberalization, the challenge is to upgrade industry associations, not just firms, particularly their capacity to deliver technological upgrading services to their members.

Industry associations in Nepal play a critical role in promoting industrial development, however they face several constraints. The most serious one is that they are not adequately represented in government institutions. For instance, the Federation of Nepalese Chambers of Commerce and Industry (FNCCI) is not officially represented in the Investment Promotion Board, and The Central Carpet Industries Association (CCIA), the Garment Association of Nepal (GAN), and the Handicraft Association of Nepal (HAN) are not represented in many government agencies and consultative mechanisms. Some associations are also quite dependent on donor assistance, and therefore raise issues of sustainability after donor assistance comes to an end. Thus, widening the representation in policy forums and upgrading of industry associations are two important areas for forging effective public-private partnership.

3.7. Weak Human Resources

3.7.1. Education quality

Due to its relatively small size, the quantitative needs of the manufacturing sector for educated manpower, whether primary and secondary school leavers, or post-secondary technician-level and degree level graduates, are likely to be satisfied by the current output of education and training system. For example, engineers and scientists form typically less than one per cent of the manufacturing workforce even in the modern sector. Medium and large firms (above 50 workers) employed a total of 150,000 workers, out of which perhaps 1,500 were engineers and scientists. A 10 per cent annual growth rate of such firms would translate into an additional demand of 150 technical graduates. Similarly, science and engineering technicians form typically less than 2 per cent of the modern manufacturing work force, so their additional demand would be perhaps 300 per annum.

The issue of weak human resources for the manufacturing sector is therefore not so much one of quantity but quality. The primary education system produces relatively poor primary school leavers due to, among others, insufficient numbers of teachers, who are moreover poorly motivated and paid, and inadequately trained in modern teaching methodologies, insufficient and poor quality textbooks and other teaching materials, and a weak quality control and supervisory system to ensure that minimum standards are being met. The secondary education system, which comprises a general and a technical stream in its final two
grades, suffers from most of the above problems. In addition, secondary education quality has deteriorated because it has expanded rapidly in recent years, and because of the low quality of its intake of primary school leavers. Similarly, the tertiary education system has suffered from the poor quality of its intake of secondary school leavers.

3.7.2. Skilled labour for manufacturing sector

An important indication of the need for qualified and experienced manpower in the manufacturing sector is the presence of foreign workers. These accounted for 7 per cent of the total according to the 1996/97 manufacturing census on average, ranging from a high of 14 per cent for technical personnel, to 8 per cent for operative and contract workers, and 4 per cent for administrative staff. Because skilled foreign workers usually cost more to employ than domestic workers, manufacturing firms must find it difficult to recruit and retain Nepali workers for most of the current positions occupied by foreign workers. Here again, the issue may not be of quantity but quality.

4. Five-Point Industrial Transformation Agenda

4.1. Industrial Restructuring and Fostering Future Promising Industries

4.1.1. Approach to industrial restructuring

It would be tempting, in the short-term, to rescue ailing industries identified in section 2.4, and which are at odds with Nepal’s current and near future comparative advantage. Political considerations and the safeguarding of jobs are of course major considerations in this context. However, the negative consequences of such an attempt in the short, medium and long term outweigh their short-term benefits for several reasons:

- an inappropriate industrial structure would be maintained;
- the rescue operation would be a significant drain on the state budget (a complete package would be unaffordable anyway);
- consumers at large would be paying relatively higher prices for the corresponding products, if import duties were maintained at a high level;
- industries which could be established utilizing the raw materials from the ailing industries would not be forthcoming, as raw material prices would be higher than international competitive prices;
- infrastructural projects would suffer from relatively higher prices; and
- the ailing industries would come under increasing pressure as India liberalizes its trade.

A more appropriate response would be for the government not to bail out these industries, but to allow them to be gradually phased out (including the privatization or liquidation of state-owned enterprises), to assist the industries in their efforts to restructure, and facilitate the relocation of employees to more promising activities. Restructuring efforts would be assisted by amending the Labour Law, providing a credit guarantee scheme for mergers and industrial sub-sector restructuring, providing a subsidy to enterprises permanently employing retrenched employees from state-owned enterprises (using funds that would come from retrenchment allowances that would otherwise have had to be paid), and providing an incentive to enterprises ready to permanently employ retrenched employees.
4.1.2. Approach to fostering future promising industries

In addition to encouraging and facilitating industrial restructuring and softening its negative impact, the government should also facilitate the fostering of healthy or potentially healthy industries, with the implementation of economy-wide and manufacturing sector-wide measures to be outlined in sections 4.2 to 4.5. There may, however, be some justification for some stronger government interventions in selected important and promising sub-sectors. Policy analysts are frequently asked to identify future promising manufacturing sub-sectors, product groups or individual products (‘sunrise’ industries or ‘winners’), with the underlying assumption that these industries should be promoted by targeted government incentives. However, identifying such products or industries is a highly dangerous undertaking, for the following reasons. First, international experience in ‘picking winners’ is overwhelmingly negative, or mixed at best. Notable exceptions are Japan, Korea and Singapore, however these countries had strong governments, well paid and competent staff, close working relations and influence over the private sector, and the financial resources to consistently pursue targeted industrial policies. Even so, these governments did make mistakes, but had the capability to adjust their policies. Most other international experience is quite negative.

Second, Nepal’s own track record of targeting specific manufacturing sub-sectors and products proved to be quite negative. In the 1970s and 1980s, manufacturing sub-sectors such as textile, basic metals and cement were promoted using high tariff protection, subsidized loans and the establishment of state-owned enterprises. These are precisely the manufacturing sub-sectors that are ailing today, while manufacturing sub-sectors and products that were not given any specific support, such as carpets, garments and Pashmina, thrived.

Third, even if it were possible to rank manufacturing sub-sectors, product groups and individual products in terms of likely future success or failure, it is difficult to use the information for designing appropriate incentives. The likely failures should not be supported in any case, while likely successes need not be supported. Between these two categories, the task is to identify manufacturing sub-sectors, product groups and individual products that are likely to prove successful, provided they receive time-bound incentives. Such ‘infant industry’ support is justified from the point of view of strict economic theory. Nevertheless, there is considerable risk that errors are made in the identification of areas for incentives. In practice too, temporary incentives, once introduced, are almost impossible to withdraw, due to economic inefficiencies and extensive rent seeking. The government is likely to face similar challenges with the recently introduced ‘sick industry scheme’.

Fourth, international experience strongly suggests that functional incentives are more appropriate than sub-sector or product-specific incentives, and more efficient in achieving government objectives. Thus, functional incentives linked to, for instance, skills upgrading, technological upgrading and export performance, are more efficient than general tax incentives for the production of specific goods. Fifth, identifying future business opportunities is not a core competence of either government officials or technical experts and consultants. This is an area where private sector entrepreneurs themselves have competence. Governments should focus on putting an enabling business environment in place, and ensuring an efficient physical infrastructure and adequate availability of educated human resources, while leaving it to the private business sector to decide what products should be manufactured.

And sixth, even when the planning of government services require a long lead time, such as
in the provision of general education, technical education and physical infrastructure, the government does not need to identify future ‘sunrise’ industries in precise terms. The analysis of the most important infrastructural needs in Section 3.3 above indicated the need for general physical infrastructure such as rural electrification and investment in hydropower, which would benefit all sub-sectors. Similarly, Section 3.7 showed that the quantitative requirements of the manufacturing sector for highly educated manpower were within reach of the existing education and training system, and that the government’s efforts in this respect should focus on the provision of quality education and training.

It is important in this context to recognize that comparative and competitive advantages, as well as other external factors, are not static, but change over time, sometimes rapidly and unpredictably. It is therefore essential that the forecasting of future industrial structures (including both ‘sunrise’ and ‘sunset’ industries) be seen as a continuous process, and a process that is pursued in close consultation between the public and private sectors. Also important is to recognize that comparative advantage is not a sufficient precondition for ‘sunrise’ industries to develop. It takes individual firms and entrepreneurs to exploit a country’s comparative advantage and translate it into a competitive advantage. The uncertainty whether or not such firms and entrepreneurs will emerge makes predictions about future ‘sunrise’ industries even more difficult.

In conclusion, the task of identifying future ‘sunrise’ industries, and provide such industries with incentive packages, should not be seen as a priority task of the government, nor a focus of the present IDPP. The government’s main task vis-à-vis the industrial sector should rather be to facilitate the business community to identify and develop possible ‘sunrise’ industries, using functional measures such as contained in 4.2 to 4.5. Furthermore, in order to effectively perform this role, the government should involve itself in a continuous dialogue with the private sector business community to respond to the evolving needs of the business community. Based on such a dialogue, concerted efforts could be designed to support and foster potential ‘sunrise’ industries as identified by the business community.

4.1.3. Facilitating the development of promising industries

Promising industries are those with a high potential for creating value-added, producing exports and generating employment. Based on available information and knowledge, three manufacturing sub-sectors fit these criteria, namely, the food, carpet and garments sub-sectors. Details of recommended action for each of these sub-sectors are contained in the IDPP analytical report. Below are principal recommendations for these sub-sectors, as well as some key interventions in other manufacturing sub-sectors.

Food sub-sector. The implementation of the Agricultural Perspective Plan is a prerequisite for the long-term development of the food industry sub-sector. The Agricultural Perspective Plan is, however, a costly scheme. Fortunately, the government has at its disposal a less costly means to foster the food sub-sector. This sub-sector is the most regulated sub-sector of all, requiring a systematic deregulation and abolition of distorting government policies. The best intervention in this sub-sector will in fact amount to non-intervention.

Carpet sub-sector. The carpet industry is the manufacturing sub-sector in which Nepal probably enjoys its strongest comparative advantage. The industry and its associations have, however, not been able to adequately draw upon its comparative advantage, and have only marginally exploited the global market for carpets. Nepal’s share in the world market has stagnated at around 8 per cent in recent years until 2000 (International Trade Centre, online
database). A strong support, with donor assistance, has therefore been proposed to strengthen the sub-sector associations in assisting it members, particularly in product designs and export marketing.

*Garment sub-sector.* The garment sub-sector, despite current problems, is also a potential long-term growth industry. However, the sub-sector needs strong and urgent support from the government in, *inter alia*, the fields of negotiation of international trade agreements, training incentives, improvements in the duty draw-back system, and export credit guarantee scheme.

*Other sub-sectors.* In the tobacco sub-sector, the government may consider divesting its last state-owned enterprise, enabling it to pursue whatever commercial policies it finds appropriate. In the leather, leather products and footwear sub-sector, the implementation of the Agricultural Perspective Plan with respect to livestock development is a prerequisite for a healthy future development of the sub-sector.

In the wood and wood products sub-sector, enforcement of laws to halt further deforestation, private sector investment in organized forestry management (integrated with wood processing) and development of village management systems of natural forests are prerequisites for increased production of wood and wood products. Until this is achieved, Nepal would reap the most benefits from its scarce timber resources by utilizing them in labour-intensive activities such as carpentry, joinery, wooden furniture manufacture and handicrafts. In the paper and paper products sub-sector, the government could encourage mergers towards larger and more efficient production units able to generate economies of scale. In the publishing and printing sub-sector, the government could remove the current negative trade protection by lowering the import duty rates for higher quality paper not being produced in Nepal, enabling the industry to compete in the field of higher quality printing works now being printed abroad.

In the electrical and electronic products sub-sector, the government could assist in attracting foreign investment for local assembly of semi-conductors by significantly improving the business environment for foreign investors. Finally, in the jewellery and handicrafts sub-sector, the government has the means to facilitate the development of manufacture of products with high potential for employment and exports.

**4.1.4. Summary**

The sub-sectoral review above has revealed an overall strained situation and unfavourable trend in most manufacturing sub-sectors in Nepal. Many exogenous factors have contributed to this undesirable situation. Nevertheless, the analysis has also demonstrated that the government has at its disposal the requisite instruments to significantly change the future course of industrial development in Nepal. By appropriate policy interventions, the government can facilitate the necessary restructuring of ailing sub-sectors, create a business environment where private sector initiatives can lead to new directions not yet foreseen and, in the process, facilitate the development of promising sub-sectors.

The government should not nurture the ambition to create, from its own resources, entirely new ‘sunrise’ industries from scratch, as this would be beyond its present financial and human resources. Reinforcing existing trends and demonstrated strengths by the Nepali industry, as well as facilitating the business community to build on these trends and strengths should, however, be well within the reach of the government.
4.2. Raising Productive Efficiency and Technological Capabilities of Domestic Firms

Competitiveness depends increasingly on technology development and its underlying knowledge, skills and organizational arrangements. Because of the long history of limited technology deepening, Nepali industry runs the risk of further competitiveness weakness as liberalization proceeds. A fundamental change in policy is in Nepal now, because it takes a considerable time to deepen technology development capabilities in industry. There are at least six elements of policy that require urgent action:

- Nepal has opted to develop a structure of public and semi-public institutions to deliver technological services to firms, and has neglected the need to strengthen technological development capabilities within industrial firms. This should be rectified to produce a balanced dual structure as in most technologically advanced countries in Asia, Europe and North America.

- Related to the first one, the current emphasis on stimulating the supply of technology by external institutes has led to the neglect for stimulating the demand for technology development on the part of industrial firms. This can be achieved by requiring the public institutes to explicitly incorporate activities directed at stimulating demand in firms. This is not about marketing the technology developed by the public institutes to firms, as much as gaining an understanding of the existing capabilities of the firms and their business strategies, and then to assist them in an open-ended process of learning.

- A comprehensive training support system should be quickly established to build a stronger body of technology-using and assimilating skills to underpin the deepening of technology development capabilities. A simple and flexible grant-based subsidy scheme, drawing on the wide range of experience available from other countries, should be designed and implemented to assist firms in investing in training concerned with design, engineering and R&D.

- R&D incentives (e.g., tax allowances and soft loans) do not address the main challenge facing countries such as Nepal at their stage of technological development, namely the need to deepen technology development at the lower boundary of design and engineering-based capabilities and activities. What is required is a direct and flexible grant-based system. Due to concern to corruption and misuse of grant funds, such a scheme should be implemented on a pilot basis. It should focus on the early stages of technology development activities, and grants would be available to individual firms for a limited period of time and for a limited number of projects. The grant scheme should be combined with an extensive outreach service, where field agents, enterprise counsellors and advisers visit firms to help recognize and identify need for change. The grant itself would fund two consecutive phases:
  - A first one to pay for consultants to prepare an initial audit identifying opportunities for the company’s future manufacturing and business strategy, and
  - A second phase to prepare an action plan tailored to the client’s needs, whether in the area of design, marketing, quality, manufacturing or business planning, or a combination of these. Recommendations on improving manufacturing techniques would include purchase of capital equipment on a cost-benefit basis, opportunities for
cost reduction and productivity improvement, improved product quality, reduction of inventory and minimization of waste, and long-term company development.

- The Department of Industry currently plays a limited role in policy-making and allocation of resources for industrial technology development. It must develop a greater awareness of technology development, and take a more direct responsibility in policy and resource allocations designed to support industrial technology development. The design and implementation of that role can draw on the successful experience of organizations such as the Economic Development Board of Singapore, the Ministry of Commerce, Industry and Energy in Korea, and several similar agencies in European countries like Ireland, UK and the Netherlands.

- Many industry associations exist in Nepal, however their involvement in building competitiveness has been limited to the provision of information on marketing and quality standards. In the new competitive environment, not just firms, but also industry associations need to upgrade. The National Productivity Centre can take the lead in upgrading industry associations. The government should play a role in ensuring that the potential for industry associations for promoting joint actions is not missed. The government also needs to understand the specific challenges faced by individual sectors. As a first step, a detailed survey of industry associations should be undertaken to map out their staffing, range of services provided, key challenges and constraints faced, and their sub-sector specific needs.

- There are numerous public and semi-public science and technology institutes in Nepal, yet their impact on the technology development of manufacturing firms has been limited. A comprehensive evaluation of each of these science and technology institutes aimed at industrial development should be undertaken, together with recommended actions for providing efficient and relevant services to manufacturing firms.

4.3. Public and Private Investment in Physical Infrastructure

Rural electrification and rural roads in every village are two of the most powerful measures to spur small and medium-scale industrial development. The government does not have adequate resources to expand and maintain a modern physical infrastructure to support rapid and sustained manufacturing development in urban and rural areas. Therefore, the draft Tenth Development Plan has given priority to the involvement of the private sector in infrastructural development. The following measures are recommended to fulfil the goals of the Tenth Plan.

4.3.1. Electricity

Hydroelectric power generation should be expanded to support rural electrification and rural industrialization, and to provide foreign exchange by exporting it to India. Micro and mini hydropower plants, in areas unlikely to be covered by the grid, can complement grid-based rural electrification. Private sector investment in hydropower can be encouraged by taking the following measures:

- Establishment of a separate electricity regulatory body involving government, business and consumers
- One-window system for private investors, including a strong inventory of projects, and transparent mechanisms for technical and economic approval
- Legal changes to allow open access to the grid and private sector operation in transmission and distribution
- Standard power purchase agreements
- Investment guarantees
- Changes in NEA monopoly to allow private parties to be involved in electricity generation, transmission, distribution and export to neighbouring countries
- Explore the potential for energy-intensive industries, such as fertilizer plants, which can offer a large market for hydropower

4.3.2. Transport and telecommunications

The existing road network, though relatively extensive, is generally inadequate to support a modern manufacturing sector. Larger investments are required for the following:

- Prioritize investment for rural road network to reach every village to support rural industrialization;
- Maintenance of existing roads;
- Widening and asphalting or existing roads;
- Establishing a direct road link between Kathmandu and India, the major axis for goods and people in both directions;
- Establishing a well-developed network of transport, port and administrative infrastructure in Nepal itself and in India and Bangladesh to reduce the high cost of transit to ports to access markets beyond immediate neighbours;
- The government, lacking the resources to expand and maintain a modern road network, must take a pro-active approach to encourage private investment in this area;
- Improve airfreight services, since the majority of carpets, garment, textile, fabricated metal and pharmaceutical firms use them, and a significant proportion of them experienced problems with the services;
- Provide legal framework for private sector participation in fixed-wire and wireless telecommunications.

To encourage rural industrialization further, the Ministry of Industry, Commerce and Supplies and private business should give their full support to the implementation of the District Transport Master Plan, to promote agro-based rural processing industries. They can also support the formulation of an integrated transport act, to incorporate all transport infrastructure and to set out general guidelines for private sector involvement in the construction and operation of roads, toll fee roads, tunnelling, airports and railways.

4.3.3. Water supply

Carpet, garments and textile firms require water in their washing and dyeing processes, and many of them provide their own supply. Water supply needs to be expanded by the government as well as encouraging private sector involvement, which should be incorporated in a new legal framework.

4.3.4. Industrial estates and zoning

Modern industries need a certain degree of concentration to benefit from positive externalities (including technology dissemination, dissemination of market information, bulk purchase and shipping arrangements from buyers and sellers), while economies of scale in the development of physical infrastructure require a certain level of demand. Other activities, such as skills training, business associations and provision of information from government agencies, also
benefit from concentration of industries. Despite all these potential benefits, manufacturing firms in Nepal are reluctant to establish their facilities in the existing nine industrial estates for three main reasons: physical facilities are inadequate, land cannot be bought but only leased, and labour disputes in one establishment quickly spread to others.

The following measures to improve the attractiveness of industrial estates can be taken:

- Provide modern, reliable and adequate physical infrastructure such as electricity, roads, telecommunication and water supply in viable industrial estates;
- Allow purchase of land inside industrial estates, which can then be used as collateral for bank loans;
- Allow the development of private industrial estates;
- Improve industrial relations through frequent consultations between government, private sector managers and trade unions;
- As an alternative to industrial estates in certain areas, local government, can also establish industrial zones based on land use patterns and existing or planned physical infrastructure.

4.4. Raising Education Quality and Improving Skills

At least as far as the manufacturing sector is concerned, the issue of weak human resources is not so much one of quantity but quality. A significant shift in the quality of education delivery is required. The Department of Industry and private business, as users of the education system, should support the allocation of additional resources to the education system and training system for the following improvements:

- The primary and secondary school education system requires sufficient numbers of teachers, who are moreover motivated and adequately paid, trained in modern teaching methodologies, who are supported with sufficient and good quality textbooks and other teaching materials, and who perform under a strong system of quality control and supervision to ensure that minimum standards are being met;
- The tertiary education system also needs to emphasize quality of education and professional training. It should also strive to impart general transferable skills including problem solving, teamwork, preparing and presenting presentations, report writing and language skills;
- The total budgetary allocation for the education sector has remained stable at 13.4 per cent of the total budget for the past seven fiscal years. However, the allocation for technical and vocational education has decreased from 4 to 1 per cent between 1995/96 and 1999/00. It is important for the private sector to assess this allocation of resources between the education sub-sectors, and to make its views known to the education and training providers;
- It is also important for the Department of Industry to concretely identify, by means of skills surveys and regular public-private consultations, the manpower attributes required by manufacturing firms in terms of knowledge, skills and attitudes, and then regularly communicate their manpower needs, in both quantity and quality terms, to the education and training authorities. In this way the authorities responsible for the manufacturing sector, but public and private, can assist the education and training authorities to take corrective actions.
4.5. Enabling Business Environment

Manufacturing firms operating in land-locked Nepal are already facing serious competitive pressures due to inadequate physical infrastructure, limited natural and human resource endowments, a relatively narrow and poor domestic market, and increased competition from neighbouring countries. The government and the private sector must work together and urgently take steps to improve the business climate in areas over which they have control.

4.5.1. Restoring political stability and law and order

Restoring political stability and law and order must rank at the top of Nepal’s list of priorities. Political instability is one of the worst outcomes of a dysfunctional democracy. It encourages a short-term outlook and corruption, and may have contributed to the present serious law and order situation in the country.

4.5.2. Supportive macroeconomic policies

The government must pursue appropriate macroeconomic policies to promote manufacturing competitiveness, including a stable competitive exchange rate and competitive interest rates.

4.5.3. Trade policy reform

- Accelerate efforts to join WTO before the end of 2004;
- Establish timetable to reduce import duties;
- Harmonize tariff rates with those of India to the extent possible. Because they differ, they encourage transitory types of industries in Nepal, while some businessmen abuse the system by importing through Nepal goods destined for India, while exporting Indian goods via Nepal;
- Abolish the floor price for the export of carpets, which was originally imposed to avoid prevent over-invoicing and to enforce quality standards, but which has now outrun its usefulness;
- Abolish export taxes on commodities prone to re-export to India. Their imposition unnecessarily complicates and burdens the tax system;
- Rationalize the existing import tariffs to avoid discriminating against domestic firms, such as higher taxes on some intermediate inputs relative to finished products;
- Improve rules of origin and certificates of origin system;
- Abolish the 0.5 per cent service fee on exports.

4.5.4. Public-private-union consultation mechanism

Several new institutions and agencies have been established to facilitate coordination and provide efficient services to manufacturing firms and investors. Unfortunately, the desired coordination has not materialized, while their proliferation and competing mandates have become a new and serious problem. In many cases, donors have contributed to this problem by requesting the government to establish new institutions to service their projects. Now is the time to take stock, decide which of these agencies have outlived their usefulness, and merge and streamline them. While the government will face considerable opposition from vested interests inside and outside government, concrete progress is required in the following areas:
• Improve the formal institution(s) responsible for consultation between government, business and trade unions.

• **Manufacturing support agencies**: A number of agencies are responsible for the developing and supporting the manufacturing sector, but their functions and mandates overlap and create confusion. They include the Department of Industry, the Industrial Enterprise Development Institute and its Entrepreneurship Development Centre, the Technology Transfer and Development Project, the Institute for Environment Support, the National Productivity and Economic Development Centre and the National Productivity Council, the Nepal Trade Promotion Board and its Trade Promotion Centre, the Royal Nepal Academy of Science and Technology and the Research Centre for Applied Science and Technology. Appoint an ad hoc commission, reporting to the Prime Minister, to review their operation and recommend streamlining and merging arrangements, so that remaining industrial support agencies have a clear mandate to look after the interest of manufacturing firms.

• **Labour relation agencies**: Several agencies exist to implement labour policies, but their functions and mandates overlap and create confusion. They include the Department of Labour, Central Labour Advisory Committee, Minimum Wage Remuneration Fixation Committee, Labour Relations Committee, and Labour Courts. Appoint an ad hoc commission, reporting to the Prime Minister, to review their operation and to recommend streamlining and merging arrangements, so that remaining labour agencies have a clear mandate to look after the interest of investors and workers.

• **Tax forum**: Establish consultation forum between tax authorities, the Department of Industry and business, when formulating new tax generating schemes designed to raise revenues, to avoid discouraging manufacturing investment and activity.

4.5.5. **Efficient government**

In order for the government to change its role from regulator to facilitator of business, it must act promptly to reduce bureaucracy, red tape and corruption. Action is required to improve the efficiency of tax and custom administration, investment promotion and licensing, and government agencies.

• **Tax and customs administration**

The present tax and custom administration system suffer from severe problems, and which impede manufacturing investment and operations. They should be reformed as follows:

• Train custom officers thoroughly in accurate classification and valuation of goods for tax purposes;
• Simplify custom documentation requirements as a matter of urgency, running to 80 documents at present;
• Impose a time limit on custom officers for goods clearance;
• Institute an effective system for resolving tax disputes;
• Consider employing a competent international agency, in the short-term and medium-term, to manage customs administration and undertake training of custom officers.

• **Investment promotion**

• Appoint an ad hoc commission, reporting to the Prime Minister, to review the operation of the One-Window system and recommend changes in its operation, composition and leadership, including the possibility of representations from the land and infrastructural agencies;
• Review the performance of the Investment Promotion Board and recommend actions to increase its efficiency in attracting domestic and foreign direct investment;
• Formulate and adopt a FDI policy to encourage technological development of domestic firms, without restricting or discriminating against other types of investment.

**Government agencies**

- **Department of Industry**: Strengthen the Department of Industry to perform its new role of facilitator, and establish an analytical unit and adequately trained and motivated professional staff;
- **Department of Cottage and Small-scale Industries**: In cooperation with the Federation of Cottage and Small-scale Industries, prepare a strategy and policies for promoting small-scale and rural-based enterprises;
- **Department of Labour**: Strengthen the role of the Department of Labour to improve the industrial relations environment of the country;
- **Energy policy**: Improve the coordination mechanism to effectively formulate and implement energy policies and plans;
- **Coordination agencies**: Ensure that the streamlined boards, committees, and councils do not all require the same senior government officials as members, so that meetings can take place as scheduled, and resolutions acted upon promptly.

### 4.5.6. Legislation reform

Legislation reform is required in the following areas:

- The Labour Law should be amended to facilitate recruitment and dismissal of regular workers;
- The Company Law should be amended to facilitate liquidation and abolish the need to require approval for loan transactions;
- The Contract Act should be amended to address compensation for breach of contract;
- The Land Law should be amended to provide more secure land tenure;
- Other laws to encourage investment are required, including bankruptcy, anti-dumping, intellectual property rights, and antitrust laws.

### 4.5.7. Financial sector reform

Pursuing financial sector reform is the appropriate response to address the problem of insufficient availability of credits and high interest rates:

- A credit guarantee scheme with shared risks between HMG, the banks, and the enterprises should be considered;
- Likewise, an export credit guarantee scheme—possibly assorted with a subsidized export insurance scheme—would alleviate the cash-flow constraint and mitigate the risk associated with international trade.
Conclusion

This paper has laid out a strategy for the rapid and sustainable long-term development of the manufacturing sector in Nepal. The strategy is based on a vision of a manufacturing sector which is competitive, innovative and diversified, which contributes significantly to gross domestic product and the balance of payments, which generates high labour incomes and higher living standards to eradicate poverty, which is environmentally sustainable and pollution free, which employs large numbers of skilled and motivated workers in safe and efficient working conditions, which has deep linkages with the rest of the economy, thereby generating well-paid jobs in agriculture, transport, trade and supporting services. The government-stated goal for the manufacturing sector is raise its share in GDP from ten to twenty per cent between now and 2020. This implies a sectoral growth rate of ten per cent per annum. A poverty-oriented overall strategy can make a significant contribution to poverty reduction through rural infrastructure, rural agro-based industrialization, backward linkages, and domestic and foreign direct investment in labour-intensive exports and tourism-related products.

The Nepali manufacturing sector is facing new challenges as well as suffering from long-standing weaknesses. Manufacturing growth has been uneven, and has moreover slowed down considerably in recent years. Other challenges include competition in both export and domestic markets due to rapid globalization and trade liberalization, the need to boost manufactured exports to compensate for the dwindling foreign exchange earnings from tourism, the increasingly weak market positioning of traditional Nepali exports, and an industrial structure at odds with the country’s comparative advantage, exacerbated by the impact of trade liberalization on ailing industries. Long-standing weaknesses, which have compounded the natural disadvantages of doing business in Nepal, include an unfavourable business climate (poor tax and customs administration, inefficient government and hostile legislation), inadequate physical infrastructure, low productivity, low technological level of manufacturing production, weak industrial technology development system, and weak human resources.

However, Nepal has opportunities too. It has one of the lowest wage rates in Asia, and can attract investment. There is much that the government and industry can do to take advantage of these opportunities. The new manufacturing strategy is premised on public-private partnership and joint implementation mechanisms, and consists of five components:

- restructuring ailing industries and fostering promising future industries;
- raising the productive efficiency and technological capabilities of domestic firms;
- additional investment in physical infrastructure;
- improving education quality and industrial skills; and finally
- creating an enabling business environment.

The first component of the strategy consists of undertaking policy interventions to facilitate the necessary restructuring of ailing sub-sectors, and to create a business environment where private sector initiatives can lead to new promising industries not yet foreseen. The second component is directed at raising the productive efficiency and technological capabilities of manufacturing firms, in order to raise their price competitiveness, and to enable them to identify and produce innovative products for the world market. These measures, which include a grant scheme to increase firm-based technology development and training, a pro-
active role for the Department of Industry and industry associations, are also aimed at raising the capability of domestic firms to produce more intermediate inputs used in the production of goods for the export as well as the domestic market.

The third component is aimed at expanding public and private investment in physical infrastructure, particularly rural electrification and rural roads, which are both so crucial to small and medium industries in rural areas. The fourth component of the new manufacturing strategy is to focus on the quality rather than quantity of the primary, secondary and tertiary education systems, and to upgrade industrial skills both through increased in-plant training and in technical institutions. Finally, the fifth component aims to create a conducive climate to attract manufacturing investment from domestic and foreign sources, and to allow existing manufacturing firms to flourish. In addition to emphasizing political stability and restoring law and order, concrete measures are proposed to reform the tax and administration system, and to promote efficient government.

The aim of the overall manufacturing strategy proposed here is to help manufacturing firms become competitive and innovative. Government can facilitate, but only manufacturing firms can produce. The manufacturing strategy contained in this document highlights the many areas where policy interventions by MOICS and other key Ministries will prove decisive, but which will require concerted effort and public-private implementations mechanisms. It also clearly shows priority areas for immediate action of an industry-wide nature, without the need to identify or provide financial incentives to ‘sunrise’ industries or specific sub-sectors.

The next stage will be to widely disseminate the proposed manufacturing strategy, undertake a series of consultations with business associations in the capital and in the regions, and incorporate relevant proposals and strategies for manufacturing investment and development already prepared by FNCCI, FNCSI and other industry associations. It will also be necessary to extend the above consultation process to unions representing workers, and to political parties, to achieve the widest possible level of support and backing from all stakeholders. Once a shared vision has been achieved of where the overall manufacturing sector is heading, and once public-private sector mechanisms to implement this strategy have been established for the manufacturing sector in general, sub-sectoral manufacturing strategies can be formulated for key existing and potential industrial sub-sectors for Nepal, using the approach adopted in preparing and finalizing the present document.

5. **Annex: Policy Matrix**

The five-point industrial transformation agenda contained in Section 4 of this *Strategy Paper* focuses on the most important policy measures to support the implementation of the *Industrial Development Perspective Plan* (IDPP).

The policy matrix below sets out, in summary form, all the recommendations made in the *Analytical Report* of the IDPP, together with indications of their level of priority (medium, high and top), their relative costs of intervention (low, medium and high), and the time horizon—or maturity—of their impact (short, medium and long).
Table 3: Policy Matrix: A Five-point Industrial Transformation Agenda for Nepal

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<thead>
<tr>
<th>Priority</th>
<th>Cost</th>
<th>Maturity</th>
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</table>

### 1. Facilitating Industrial Restructuring and Fostering Future Promising Industries

1.1 Facilitating industrial restructuring
   - 1.1.1 Divest (privatization or liquidation) the majority of SOEs
   - 1.1.2 Allow phasing out ailing industries with uncertain prospects
   - 1.1.3 Introduce a credit guarantee scheme for industrial restructuring
   - 1.1.4 Introduce a subsidy to enterprises permanently employing retrenched SOE employees

1.2 Sub-Sector specific support for manufacturing activities
   - 1.2.1 Implement the Agriculture Perspective Plan (APP)
   - 1.2.2 Broaden involvement in the implementation of APP to include ministries other than MOAD and FNCCI/Agro-Enterprise Centre
   - 1.2.3 Reduce distorting policies affecting prices, demand and supply of commodities for food industries
   - 1.2.4 Introduce grades/standards for products such as milk and meat
   - 1.2.5 Upgrade and provide adequate financial resources for the Institute of Food Technology
   - 1.2.6 Initiate with donor support the establishment of a carpet weaving and design training institute in the private sector
   - 1.2.7 Assist the private sector to consolidate institutional support for the carpet industry; seek donor assistance for marketing
   - 1.2.8 Introduce for tax purpose double deduction of costs for export marketing of carpets
   - 1.2.9 Initiate negotiations with USA regarding preferential access to the US market for garments
   - 1.2.10 Include garment industry as a “national priority industry” under the Industrial Enterprises Act
   - 1.2.11 Allow the private sector to manage the “dry dock” in Birgunj
   - 1.2.12 Enforce laws to halt further deforestation
   - 1.2.13 Promote private investment in organized forestry production integrated with wood processing
   - 1.2.14 Promote village management systems of natural forests
   - 1.2.15 Develop adequate quality control of imported and domestically manufactured pharmaceuticals
   - 1.2.16 Enforce WHO’s Good Manufacturing Practices (GMP)
   - 1.2.17 Increase gradually requirements of licensing of pharmacies
   - 1.2.18 Ensure that a critical mass of staff is educated in pharmacology, chemistry and microbiology to support pharmaceutical industries
   - 1.2.19 Continue support in R&D for traditional medicines
   - 1.2.20 Enforce more strongly environmental regulations for brick manufacturing and consider incentives to pursue this objective
   - 1.2.21 Promote private sector involvement in exploration, mining and further processing of non-metallic minerals by abolishing Government rights to share in as an investor and co-owner in the mining of discovered minerals
   - 1.2.22 Strengthen education and training for the mechanical engineering sub-sector
   - 1.2.23 Introduce business support services by engineering training institutes
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<tr>
<th>Policy Intervention</th>
<th>Priority</th>
<th>Cost</th>
<th>Maturity</th>
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<td>1.2.24 Bureau of Standards to adopt standards for engineering products</td>
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<td>1.2.25 Adopt as Government procurement policy to disaggregate major purchases of engineering goods to allow domestic firms to compete for parts of major infrastructure projects</td>
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<td>1.2.26 Department of Archaeology to remove administrative obstacles for the production and exports of jewellery</td>
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<td>2. Raising productive efficiency and technological capabilities of domestic firms</td>
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<td>2.1 Strengthen technological development capabilities within industrial firms</td>
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<td>2.1.1 Public institutes to explicitly stimulate demand by firms</td>
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<tr>
<td>2.1.2 Introduce a grant-based subsidy scheme for training in design, engineering and R&amp;D</td>
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<td>2.1.3 Introduce on a pilot basis a grant-based system to support the early stages of technology development activities</td>
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<td>2.2 Strengthen support for technological development</td>
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<td>2.2.1 Modify and strengthen the role of Department of Industry to support technological development</td>
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<td>2.2.2 Strengthen the role of industry associations to support technological development</td>
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<td>2.2.3 Detailed review of each S&amp;T public institute aimed at manufacturing sector. Recommend measures to effectively serve manufacturing firms.</td>
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<td>2.2.4 Abolish the requirement under the Foreign Investment and Technology Transfer Act to obtain permission for technology transfer agreements</td>
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<td>3. Public and private investment in physical infrastructure</td>
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<td>3.1 Electricity</td>
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<td>3.1.1 Establish a separate regulatory body for the electricity sector involving also representatives of consumer interests</td>
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<td>3.1.2 One-window system for private investors; inventory of projects; transparent mechanisms for project appraisal and approval</td>
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<td>3.1.3 Legal amendments to allow open access to the grid and private sector operation in transmission and distribution</td>
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<td>3.1.4 Prepare standard power purchase agreements</td>
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<td>3.1.5 Strengthen the system of investment guarantees</td>
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<td>3.1.6 Change in NEA monopoly to allow private parties to be involved in generation, transmission, distribution and exports</td>
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<td>3.1.7 Explore the potential for energy intensive industries</td>
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<td>3.2 Transport and telecommunications</td>
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<td>3.2.1 Extend rural road network to reach every village</td>
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<td>3.2.2 Maintenance of existing roads</td>
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<td>3.2.3 Improvements (widening and asphaltalting) of existing roads</td>
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<td>3.2.4 Establish a direct road link between Kathmandu and India</td>
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<td>3.2.5 Improve integration of transport, port and administration Nepal-India-Bangladesh to facilitate exports to overseas markets</td>
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<td>Policy Intervention</td>
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<td>3.2.6 Promote private sector involvement in the road sector</td>
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<td>3.2.7 Improve airfreight services</td>
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<td>3.2.8 Provide legal framework for private sector participation in fixed-wire and wireless telecommunications</td>
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<td>3.3 Water Supply</td>
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<td>3.3.1 Expand water supply</td>
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<td>3.3.2 Provide legal framework for private sector participation</td>
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<td>3.4 Industrial estates and zoning</td>
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<td>3.4.1 Upgrade physical infrastructure for viable existing industrial estates</td>
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<td>3.4.2 Provide legal framework to allow for purchase of land inside industrial estates</td>
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<td>3.4.3 Allow for private sector development of industrial estates</td>
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<td>3.4.4 Improve industrial relations in industrial estates through improved mechanisms of Government-private sector-trade union consultations</td>
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<td>4. Raising Education Quality and Improving Skills</td>
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<td>4.1 Upgrade quality of primary and secondary school education</td>
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<td>4.2. Upgrade quality of tertiary education system</td>
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<td>4.3 Public-private sector review of budget allocations for technical and vocational education</td>
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<td>4.4 Department of Industry to undertake regular surveys of manpower needs by the manufacturing sector</td>
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<td>4.5 Introduce a manufacturing-wide incentive scheme for upgrading skills at firm level (double deduction of training costs or voucher based)</td>
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<td>5. Enabling business environment</td>
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<td>5.1 Restore political stability and law and order</td>
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<td>5.2 Pursue macroeconomic policies to support manufacturing competitiveness</td>
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<td>5.3 Trade Policy Reform</td>
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<td>5.3.1 Accelerate efforts to join WTO before the end of 2004</td>
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<td>5.3.2 Establish timetable to reduce import duties</td>
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<td>5.3.3 Harmonize tariff rates with those of India</td>
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<td>5.3.4 Abolish the floor price for export of carpets</td>
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<td>5.3.5 Abolish export taxes for commodities re-exported to India</td>
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<td>5.3.6 Rationalize existing import tariffs to avoid disincentives</td>
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<td>5.3.7 Improve rules of origin and certificates of origin system</td>
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<td>5.3.8 Abolish the 0.5% service fee on exports</td>
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<td>5.4 Public-Private-Union Consultative Mechanism</td>
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<td>5.4.1 Strengthen public-private-union consultative bodies</td>
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<td>5.4.2 Appoint an <em>ad hoc</em> commission to review the operations of the various agencies responsible for the manufacturing sector</td>
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<td>5.4.3 Appoint an <em>ad hoc</em> commission to review the operations of the various agencies responsible for labour</td>
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<td>5.4.4 Establish public-private consultative mechanism for tax matters</td>
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<td>5.4.5 Government to involve itself in a continuous dialogue with the private sector to develop support programmes for promising future industries as identified by the business community</td>
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<td>5.5 Improve efficiency of the Government</td>
<td>5.5.1 Train customs officers in classification and valuation of goods</td>
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<td>5.5.2 Simplify custom documentation requirements</td>
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<td>5.5.3 Impose a time limit on custom officers for goods clearance</td>
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<td>5.5.4 Institute an effective system for resolving tax disputes</td>
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<td>5.5.5 Employ a competent international agency for custom management</td>
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<td>5.5.6 Review performance of One-Window system and recommend actions to increase its performance</td>
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<td>5.5.7 Review performance of Investment Promotion Board and recommend actions to increase its efficiency</td>
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<td>5.5.8 Formulate FDI policy to promote technology transfers to domestic firms (non-discriminatory)</td>
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<td>5.5.9 Strengthen policy implementation, coordination and monitoring mechanisms of the Ministry of Industry, Commerce and Supplies</td>
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<td>5.5.10 Strengthen the Department of Industry to act as a facilitator for private sector development</td>
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<td>5.5.11 DCSI, in cooperation with FNCSI, to formulate a strategy and policies for promotion of small and rural-based enterprises</td>
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