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The Less Developed Countries in the World Economy and the Performance of SAARC Countries in 1980s

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BACKGROUND

First United Nations conference on the least developed countries with the objectives to gear up these countries towards self-sustained development, to enable them to provide at least minimum standards of nutrition, health, housing and education as well as job opportunities to their people adopted the substantial programme of action (SNAP) in Paris in 1981.

In spite of national and international efforts in the decade of SNAP, the GDP growth rate attained by the LDCs as whole has been lower than recorded in 1970s; 2.3 percent per year during 1980-1988 as against a corresponding average of 3.4 in the 1970s. The most disappointing thing here is that this growth rate is below that of population growth rate which stood at 2.4 percent per year in an average which implies deterioration in per capita terms. As against this frame SAARC countries performances are quite appreciable for their GDP growth rate during 1980-1988 is recorded in an average 5.1 percent per year and remarkable thing is that all the SAARC countries managed to achieve GDP growth rates above population expansion and three of them achieved an average GDP growth rate higher than 6 percent in 1980-1988. Thus while most of the LDCs failed to achieve SNAP target which has set an annual growth rate of GDP at 7.2 percent for the LDCs, SAARC countries at least managed to achieved GDP growth above population expansion and interestingly their real growth of GDP per capita was at 3.2 percent per annum which can be indexed as the improvement in the quality of life.

As a whole in all LDCs food production failed to cope the population with average per capita production declining by 0.8 percent per annum during 1980-1988 which led them to be dependent on annually increasing, making it impossible to maintain minimum standard in nutrition and caloric intake, SAARC countries wheeled their agriculture sector towards a more stable condition, however average annual rate of growth of per capita agricultural production, except Bhutan was lower than the population growth rate. This resulted to a significant short-falls in nutrition and caloric intake in SAARC countries too.

Industry and manufacturing sectors, which are taken as the residual sectors after agriculture also noticed declined per capita growth in an

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average 0.2 percent per annum over 1980-1988 while SAARC countries noticed an average annual percentage change of 7.2 percent for the same period which kept pace with population growth and at time when rest LDCs experienced negative absolute industrial growth SAARC countries performance in these sectors is not so much dismal as compared to the SNAP target of average annual growth of 9 percent for LDCs.

Thus on an average, achievements have been fallen short of SNAP targets. LDCs achieved only 2.3 percent average annual actual growth rate of 3.3 percent against the target of 7.2, actual agricultural production growth rate remained at 1.6 percent per annum against SNAP target of 4 percent, manufacturing out put growth rate stagnated at 2.3 percent against the target of 9 percent set for decade. SNAP called for eradication of illeteracy but the absolute number of illeterates continued to rise throughout decade. There was the promise that official development assistance to LDCs will meet the target of 0.15 percent of the donars' GNP but it lagged behind 0.09 percent and the more disturbing fact is that 0.09 percent figure represents the ODA provided to present list of 42 LDCs which have population of 413 million where as the 0.15 percent target was set for the 31 countries in the LDCs list at the time of the first UN conference on the least developed countries 1981 which had population then 348 million. Situation become more worsed when aid being lagged LDCs experienced trade deficit, debt burden and fiscal imbalances growing beyond the proportions previously felt.

Social indicators give more dismal picture. There has been bare improvement in quality of life, extremely low level of literacy, education, standards of health continue to prevail. Shortage of indigenous skilled manpower remained general feature. Infant and child mortality rates as well as overall mortality rates still remained high. Low productivity of labour remained unchanged coinciding with high morbidity.

The most serious problem emerged was the environmental deterioration which proceeded at faster pace than before which in turn brought drought and natural disaster at a greater interval and with a greater intensity. The misuse and overuse of land became inevitable for a poor growing population trying to cope with its immediate need for subsistance which further aggravated the economic situation with fast desertification, deforestation declining fertility and soil erosion. This problem erected a perpetual vacions circle of deforestation - lower productivity in agriculture forced growing population to clear still more forest - extend cultivation into marginal land - in turn reduction in agricultural productivity and so on.

Throughout the decade with a sharp reduction in domestic savings LDCs felt sliding down the consumption levels previously achieved and worst foreign exchange constraints rebounded on the real out-put and economic growth with marked declined in investment as volume of investment fell by annual average of 5.5 percent, however 5 LDCs, Botsivana, Malawi, Myanmar, Nepal and Togo succeeded in maintaining gross domestic rates consistently above 10 percent of GDP during 1980-1987. LDCs became more marginal in their share in world exports amounting only 0.3 percent in 1988 as compared 1.4 percent in 1960.

In these LDCs performance-frame, we see the picture of SAARC countries:

Bangladesh

Bangladesh economy has been intangled with structural problems over the past one decade.

The economy is heavily dependent on agriculture, mainly based on foodgrain and jute. Nearly half of GNP and half of exports volume and three quarters of employment generate the agriculture. Its 3.7 percent average annual growth rate will neither can absorb rapidly growing labour force nor generate adequate foreign exchange to sustain higher economic growth. The most disturbing factor embodied with growing labour force is that it is largely unskilled and lacks education, health and nutrition necessary to make the transition to faster industrialisation and export growth and interestingly Bangladesh's public expenditures per capita on education and health is lowest in the world. Therefore, even rapid growth of industry, which accounts 14 percent of GNP at present, faces severe constraint.

Moreover, on the otherside economy is characterised by a low level of savings, 4.8 percent in FY 1989 and large structural payments gap. Remittances share in national savings is nearly half of national savings and export earnings cover only about 40 percent of the import bill, sluggish financial administration and low ebb of economic activity have put severe constraints on growth of domestic revenue generation which in turn has limited financing of public sector investment as well as operations and maintenance of existing assets. Besides deficient infrastructure such as transport and power, inefficient enterprises, weak public administration, weak domestic financial system and repeated natural disaster have been the leading issues in the growth of Bangladesh since its emergence.

Bangladesh's economic performances slipped further in recent three year period. In 1988 to 1989 GDP growth averaged only about 2 percent which can be attributed to floods which retarded the production of rice jute and thus marked decline in GDP. Income and employment losses with these set backs resulted for a weak domestic demand of manifactured products so manufacturing recorded less than 3 percent growth during that period.

Deficiency in government's economic management with large cut in public investment and moving into overly cautions fiscal management and inefficient project performance deteriorated the economy to the state of stagnation and slipped the modest improvement in the poverty situation which was achieved in early 1980s.

Bangladesh government's development strategy is targeted to alleviate poverty through increased access to food and other basic needs. This is a very formidable task for a country like Bangladesh where 30 percent of people are rural and landless. It is estimated that half of its population have incomes below the poverty level and one fifth have caloric consumption below the extremely poverty level.

Bangladesh external debt has been the tune of US $ 10.2 billion which is 52.9 percent of GDP in 1988. Most alarming phenomenon is that its debt service ratio is equal to 21 percent of export of goods and services and private transfers in 1989 and this is much more higher than that of her SAARC counterparts and suggests an efficient debt management and need of highly concessional external debt and aid.

Bhutan

A small isolated country in the eastern Himalaya, Bhutan's development efforts date back from the early 1960s. Bhutan's at that time produced enough to feed and house its people although life expectancy and literacy were quite low. A landlocked country with a population 1.4 million and an area of 47 thousands square kilometers eagerly tried to avoid the mistakes committed in course of development by other countries specially mistakes done in environmental damage from over exploitation of forests or uncontrolled growth of tourism. Against the Sluggish public finance in most of LDCs Bhutan followed its won set of priorities and keep public finance on an even keen (the Bhutanese currency is known as ngultum which is pegged to the Indian rupee at per US $ 1 = Nu 13.00) and build up a clean yet create trained bureaucracy. This led the Bhutan to maintain sustained growth most remarkably being free from any serious economic, social or cultural disruption comparied to the other SAARC countries.

Out of total surface of the country one third is barren or under snow-cover and remarkably half of the total surface is covered by dense natural forest and about 6.8 percent land is inhabited and cultivated. Primarily agricultural economy it provides livelihood to 85 percent of the people and accounts 41 percent of GDP. In Bhutan's economy, though in agriculture improvement can be done through intensification and cash crop development, main push for development will have to come from sector like forestry and water resources. At present forest 10 percent contribution to GDP is low seeing the present rate of exploitation because it is still will be below (10 percent contribution to GDP) long-term sustainable yield levels. Even more, for country's sinews for development taping the water resource is of much more importance for recently completed 336 Mw Chhukha hydro-electric power product accelerated Bhutan's growth rate by 6.2 percent. Besides Bhutan's other mineral resources like calcium carbide and a small population it has a very favourable long-term development potential.

Bhutan's per capita GDP is estimated US $ 180, which would make Bhutan 9th position holder amongs the poor countries in per capita GDP ascending order. It appears, to some degree that this per capita GDP to underestimate the true standard of living in the country and this is quite possible with over estimate of population. On the nutritional side a daily per capita intake of 2571 calories, is 25 percent higher for South Asia as a whole, inclicate better standard of living.

This nutritional intake, availability housing land, livestock and fuel all point to higher per capita income and GDP growth rate of 6.2 percent per annum against 2 to 2.1 percent population growth rate is

also well ahead. One of the very remarkable feature of Bhutan's economy which is distinctly shaping is that its revenue base is widening as its current revenues have grown very rapidly with a rate of 22 percent per year. That is why in spite of strongly dependent on foreign aid during Fifth Plan Bhutan's capital expenditure amounted to 26 percent of GDP and current expenditure amounted 14 percent of GDP is 1987, half of which is of development characters financed almost by internal source while only the capital expenditure have been financed by foreign aid.

But in spite of the fact that Bhutan's performance is comparatively better than other SAARC countries some of Bhutan's social indicators are worse than those of its neighbours. Life expectancy at birth is only 48 years of males and 49 years for females, infant mortality is 127 per thousand. Incidence of disease is quite high and primary school enrollment rate is 20 percent for children aged 6 to 11 years.

India

India is the seventh largest country in area and with a population 815.6 million the second most populated in the world. With an average per capita income of US $ 340 in 1988, India is also a poor country. Agriculture dominates the economy and accounts for 60 percent employment, population, is increasing by 2.0 percent per annum, thus with a large and growing population, increasing pressure on natural resources Indian economy has shown significant environmental degration. Industrial sector too has not grown in a desired rate thus being unable to absorb the growing labour force and bring about significantly higher per capita income levels.

In other area also performances fell short of expectations. GDP growth was low, averaging 3.5 percent year that is 1.4 percent per capita ghrough the mid 1970s which was sufficient to have a significant impact on poverty which forced close to half of Indian population to live below the poverty line. Despite high levels of saving and investment economy observed low growth which indicate that Indian economy has a serious weakness of inefficiency in resources allocation and use. Government's strategy of developing indigenous production and technology with heavy protection and state intervention resulted a widening gap between Indian's efficiency levels and technological capabilities. Instead of giving growing emphasis on efficiency and willingness to experiment with new institutional structures based on independent decision making process reliance on massive capital formation to achieve growth retarted human capital formation.

Coming to the seventh plan (1985-86 to 1989-90) Indian government realised this factor as a hurdle to growth hence policy since then incorporated to a greater efficiency, productivity and competitiveness in the economy and direct interventions to boost the incomes of poor by creating large employment opportunities. This gradual evolution of economic policies resulted in better performances and seventh plan period achieved growth rate averaged 5.8 percent and the most remarkable feature of this growth is that it was sustained without higher inflation with an annual average 6.4 percent rise of whole sale price index during 1985-90 compared to 9.4 percent in 1980-1985.

Build up of stresses in macro-economic imbalances have also witnessed and most serious is persistence resource gap emerged in public sector finance. Government current spending out stripped revenues and its over all deficit has risen from 5 percent of GDP at the end of the 1970s to an average of 10.1 percent of GDP in 1985-1990. With a sinking tendency of invisibles in 1980s due to increase in interest payments abroad and stagnated private remittances current account deficit steadily increased from US $ 3.2 billion in 1980-1985 to US $ 7.2 billion in 1985-1990. This also leaded the economy to the state of rapidly accumulated debt and the total debt stock in March 1990 amounted to US $ 63 billion and debt service ratio rose from 18 percent in 1984/85 to 27.3 percent in 1989/90.

Maldives

Maldives is a member of SAARC countries, its area coverage is 90,000 square kilometers with 1190 islands inhabitated 200 and unhabited 990, lying to the west of India and Sri Lanka. The islands are grouped in 19 atolls and total land area is 298 square kilometers of which less than 10 percent (about 28 square kilometers) is cultivable. More than a quarter of the total population lives (about 202000, 1988 estimates) in the capital Male which has an area of 2 square kilometers.

With a long and narrow chain of islands most serious hurdle of the development Maldives faces is of limitations of inter-island transport and communications which made atolls and Male to be isolated from each other and put heavy strain on economy with increased cost of distribution of goods and services, social and economic, that are now heavily concentrated in Male. The population is growing at 3.5 percent per annum and the growth rate of capital is 6.6 percent per annum. Heavy concentration of incomes resources and services in Male made immigrants inflow faster. In contrast to other SAARC countries Maldives economy is heavily dependent on marine resources and tourism. Agricultural production is mostly on subsistance level and cultivation of course grains, tubers and tropical fruits meets only 10 percent of food consumption and major food except fish are imported. With extremely small cultivable area possibilities of increasing agricultural production is a severely limited. So economic activity is heavily concentrated in marine resources and tourist attraction.

Maldives has no known mineral resources and industrial activity is confined to cottage, repair small scale fabrication industries and recently established export-oriented garment factories. Lack of the resources and small size of the domestic market are the heavy constraints of Maldives to have an import substituting enterprise.

But In spite of this specialised nature of Maldives its growth performances are ahead of other SAARC countries performances. During 1974-88 real GDP grew at an annual rate of about 10 percent and for this fishing and tourism sectors are highly accountable.

Fishing sector, with mechanisation and improved fishing fleet accounts for 16 percent of GDP and tourism sector has now become even larger sector of economy, accounting 17 percent of GDP, 60 percent of

foreign exchange earnings and about 25 percent of government revenue despite a fall in number of tourists resulting from political uncertainties value added by tourism increased.

In addition to fisheries and tourism the trade and distribution sector showed growth so in 1990 it is expected that real GDP of Maldives will remain at around 8-9 percent. Prior to 1972 Maldives had virtually no external debt, but with heavy imports growing development needs its debt accumulated rapidly reached to the point of nearly 120 percent of GDP in 1984. But remarkably excellent performance of external sector and more prudent borrowing policy debt obligation fell from 120 percent of GDP in 1984 to 45 percent of GDP in 1989 and debt service ratio declined to 5 percent, Maldives growth will depend on fishing and tourism because of scarcity of cultivable land. But tinny islands can generate immense economic activity as government is going to implement the policy to lease out the islands to private growers for the cultivation of coconut timber and firewood in near future.

So Maldive's government prudent fiscal policy, directing investments toward priority infrastructure and human resource development, to relieve shortage of skilled and semi-skilled labour made the people of Maldive to live with per capita GNP, US $ 410 which is high compared to other SAARC Countries except Sri Lanka.

Nepal

Nepal is one of the poorest country in the world with population of 18 million and the growing rate of 2.6 percent from 1971 to 1988. Other social indicators are also well below the average of South Asia, being life expectancy at birth 51 years, infant mortality 126 per 1000, adult literacy being only 19 percent Nepal ranks 11 position amongs the poorest of the poor country, 90 to 92 percent of the population lives in rural area and the most interesting thing is population density with respect to areable land is 590 persons per square kilometers which is one of highest in the world. Per capita income is estimated US $ 180.

Agriculture accounts for 56 percent of Nepal's GDP and 92 percent of labour force is engaged in agriculture. Crop production account for about 60 percent of agricultural output and live stock for 30 percent and forestry for 10 percent. Apart from agriculture Nepal's important exploitable resources are hydropower and tourism. Tourism sector provide 20 percent of the country's export earnings. Other major export earnings are carpets and readymade garments which now account for over half of merchandise exports.

As agriculture is the main occupation and high population density with respect to areable land, cultivation of increasingly marginal land and forests has been the feature of agriculture sector. Forests have further over used and misused to meet the growing demand of household fuelwood and this further leaded for soil erosion, river silting and flooding resulting worst environmental degradation. Further more rugged topography forced to limit the areable land due to which widely accepted application of standard cultivation technology has limited scope

so the productivity increment. Population pressure in hills contributed to rapid deforestation thus inviting severe threats to future economy of Nepal. These factors complicated by landlocked position, institutional weakness limited flexibility in designing economic policies along with long border with India, deficiencies in public investment programmes and administrative service and heavily regulated industrial production suffocated the private sector initiative. Developmental plans started in 1950s concentrated on creating of infrastructure, growth during 1970s failed to keep up with population but on other side demanded huge public expenditure resulting over all budget deficit to rise from 6.1 percent of GDP in 1980-81 to 12.3 percent in 1982-83 and led to a substantial fall in international reserves which clearly indicate that growth was not sustainable.

Toward the beginning of 7th plan first time it was felt that only the macroeconomic stability will not lead to growth but structural adjustment with objectives to increase domestic resource mobilisation liberalisation of industrial and commercial policy and to promote agricultural productivity through efficient distribution of agricultural inputs and water delivery system is essential to sustain growth. The response of this change was recorded good. Real GDP grew by 9.8 percent in 1988 with agriculture growing by 8.6 percent, commodity export by 33 percent in dollar terms in 1988 and continued to be strong in 1989 also, and due to increase in exports and tourism receipts by March 1989 foreign exchange reserves increased to over six months worth of imports of goods and services despite growth in imports.

On March 23, 1989 the trade and transit treaties between Nepal and India expired following a breakdown in renewal negotiations. This had had a serious repercussions on the economy as a whole. The over all loss the impasse attributed in value added in fiscal year 1989 was over 3 percent of annual GDP and real GDP growth for the year was 1.5 percent against the target of 4.5 percent. Domestic revenue declined and consumer prices increased by 10 percent and sustaining the government expenditure at high level in April 1989 government's over all budget deficit widened sharply to 13.9 percent of GDP. In the third quarter of fiscal year 1990 Nepal underwent a period of multi-party democratic restoration struggle which resulted in formation, of an interim coalition government.

Nepal's long-term economic development problems are multiple. External assistance will continue to play dominant role in financing, investment ever if domestic resource mobilisation increases. Aid disbursements to Nepal have averaged US $ 200 million per year which is 7 percent of GNP with grants exceeding 70 percent, and more interesting is that a large portion of technical assistance and direct aid payments is unrecorded. This magnitude of external assistance has made Nepal aid, dependent and disbursed foreign debt out standing amounted to US $ 1.3 billion in 1989 and debt service ratio rose to 17 percent, this will continue to increase as there is large undisbursed aid in pipeline.

Pakistan

Pakistan with a population of about 106 million and per capita income of US $ 350 is of the size of Spain an Italy; 796 thousands of square kilometers. Remarkable thing about Pakistan is that its population density of 134 persons per square kilometers is higher than the 1985 average for the low income economies which is 75 per square kilometers. Thirty one percent people lives in urban areas and population growth rate averages 3.2 percent per year. Primary education enrollment has remained constant being 53 percent of age group in 1985 overlast two decades which is well below the average enrollment achieved in low income countries.

At the time of independence Pakistan struggled for existence with primary products base economy having limited traditional markets and shortage of skilled manpower followed by low manufacturing capacity as the result of violent exchange of populations with India due to partition.

Despite these obstacles its economy attained the growth averaging 5 percent per annum and in constant rupee terms per capita income doubled between 1950 to 1985 coming to the 1970s this growth was slightly interrupted by the nationalisation process and huge public investments in manufacturing which demoralised private sector that had been responsible for rapid economic growth in 1960s without improving public sector performances.

Coming to the 1980s Pakistan's economic performance though commendable comparing to many underdeveloping countries for read GDP growth averaged 6.3 percent per year since 1980, and agriculture manufacturing and energy sectors marked satisfactory and consistance growth performances it interweaved with worsening macro-economic imbalances. Fiscal performance deteriorated with rapid growth in recurrent expenditure and failure in revenue generating efforts and increasing share of debt service in budgetary resources. Budget deficit increaséd from 5.3 percent of GDP in 1980 to 8.2 percent of GDP in 1986-87 and 8.6 percent of GDP in 1987. To comparate for deteriorating public savings domestic bank and non-bank borrowing as well as external borrowing touched the height. The ratio of domestic debt to the GDP increased from 28 percent in 1983 to over 40 percent in 1988 an ratio of total civilian external debt to GNP increased from 37 percent to 42 percent. This laid high pressure on balance of payments widening current account deficit and foreign exchange reserves reduced to the level of three weeks of imports.

Traditionally Pakistan has favoured import substitution over export promotion and based it's macro-economic adjustment on anti-export bias which led for a sizeable deficit in external trade account and created a narrow export base. The continuous concentration of export in rice and cotton textiles which are subject to protectionist pressure from industrialist countries in case of cotton textiles and uncertain of price prospects in case of rice and declining workers remittance which reduced from US $ 2.9 billion in 1983 to 2 billion recently leave Pakistan's balance of payments fragile and vulnerable external shocks.

Other constraints of to the pace of development are low saving and investment rates ranging between 12 percent and 16 percent of GNP respectively, high population growth rate, poor performance in human resource and social development and widening income distribution pattern which pose the serious problem. It's literacy rate is almost in grass root which ranks at 29 percent and more disturbing indicator is that rural females literacy is only 6 percent which very few countries have such poor record. Education facility are unevenly distributed and clustered in urban areas. Infant mortality, life expectancy are also poor and health coverage is limited which is focused on urban areas. The most alarming problem that Pakistan embroiding is to have serious labour market difficulties in future, growth in the economically active population over decade of 1980s has exceeded domestic employment growth which stood at 3.0 percent and 2.4 percent respectively and it is well projected that with high population growth rate of 3.2 percent per annum labour force growth rate will continue to exceed 3 percent per year for at least 20 years even if fertility rate falls further which is not likely to be with 6 percent literacy of rural females.

Thus, for substained economic growth Pakistan has to redress macro-economic imbalances, strength the domestic source of growth by increasing productivity, creating employment opportunities and human resources development.

Sri Lanka

Sri Lanka is a very interesting case of an economy which ahead of the developing countries in 1950s but which did not maintain its position over time. In 1950s its per capita income was about half of Japan's or Malaysia's and higher than Korea's or Thailand's. In terms of life expectancy at birth, school enrollment ratio, literacy, infant-mortality rates, living standards of people were among the highest in the developing world. After 40 years country's per capita income is less than 5 percent that of Japan, less than a fifth that of Malaysia and below those of South Korea and Thailand. It has experienced remarkably slow growth followed by fiscal deficits alarmingly large, critical balance of payments position, increasing poverty and chronic high unemployment.

This gradually evolving high unemployment and macro-economic imbalances absorbed most of the country's resources to support finance of food production along with the capital intensive investment and remarkably very huge amount at the cost of plantation based exports of tea rubber and coconut. Thus on the one side it demanded the government's active participation in economic life on the other heavy reliance was placed on the state as a promoter. It was considered government as an investor should establish and own public enterprises should protected domestic market from external competition. Peculiar thing of this developmental strategy was that it did not allow private initiatives, in most cases, to create more pragmatic economic environment and government put restrictions on private investment licensing and barrier on both external and domestic trade. The result has been that Sri Lanka could not made transition to an urban based industrialised and export oriented economy which might have created large employment opportunities.

Failed in this strategy it led additional pressure on the budget. Pressure from highly educated population to increase household consumption levels unsubstainable burden on the budget because the permanent feature and food subsidies alone reached 5-6 percent of GDP in the late 1970s.

On the other side, as labour force in Sri Lanka is most educated, increasing unemployment created popular discontent and to diffuse it government created public sector employment rapidly and became the largest employer that is why since the early 1960s, the public sector deficits have never been below 6-8 percent of GDP.

This unsubstainable strategy failed to cure the economy, hence government started to have major reversal in policies and limited the role of the state in economy, tended to operation of market forces in allocation of resources and deregulation in price control and trade both external and internal by replacing quota by tariffs and opening the domestic trade to private sector.

These new policies brought noteworthy improvement in economic performance. The GDP growth rate close to 3 percent per annum in 1970-77 increased to 7 percent in 1978-80 and remained at 5 percent in 1981-85, exports were diversified and rice production grew at over 5 percent per annum in 1978-86 making to reach near-self sufficiency level and unemployment reduced from a high of 22 percent to 12 percent in 1980s.

But, this situation did not last long. Economy started to deteriorate. In contrast to growth after 1977 out put slowed to 4 percent in 1986 and less than 3 percent in 1987-89, unemployment has increased to 16 percent of the labour force and macro-economic imbalances continued to be chronic with high fiscal deficits. The current account deficit of balance of payment reached 8 percent of GDP in 1988 and 10 percents in 1989 and the government debt to the tune of 5 percent of GDP. Debt service ratio reached an all time worth of 30 percent of exports and alarmingly inflated from 2 percent in 1985 to 8 to 10 percent in 1986-87 and 12-15 percent in 1988-89.

Thus from 1986 onward economy further slipped down, current account deficit continued to be high a 9 percent of GDP, growth rate of GDP slowed to under 4 percent unemployment rose to 17 percent and gross foreign exchange reserves reached to the level of 2 months of imports.

The problems of Sri Lanka's development are related with the results of controls and extensive government intervention in economy which made the government still today to employ one half of the country's non-agricultural force and one fifth of agricultural labour force. Constituting both it accounts half of GDP. Public sector's economic activities have been of so diverse that huge public expenditure yielded low economic returns. As agriculture contributes only 26 percent to GDP and nearly 80 percent people dependent on agriculture reducing the scope of government involvement in agriculture sector may result a transition towards increasing productivity. Finally retardation in development has been brought also by the out break of ethnic conflict as well growing

political violence and frequent elections which put additional burden on budget and on the balance of payments which made the fiscal deficit to be 15.6 percent of GDP in 1986 and debt service ratio to stand 24 percent of GDP and total external debt to the tune of 5189 million US $ in 1988.

CONCLUSION

All the SAARC countries have shown remarkably poor performances in 1980s. Number of factors attributed to these and as general characters of economic parameters of SAARC are symmetrical, their basic structural constraints, effects of adverse development in world economic conditions and that's effect on their economy and domestic policy short comings are the major obstacles to development and are likely to be continued for a pretty long time.

Main hurdle in the path of exploiting economic resources potentially and effectively is the structural handicap. Thus all the SAARC countries where people live the degraded standard of living have per capita GNP growth varying from 0.3, Bhutan, to 2.5, Pakistan average annual. This leaded to meager scale of savings and low level of investment coupled with a serious shortage of skilled manpower and undeveloped weak indigenous private sector created barrior for sustained growth and development. As a whole the SAARC countries have a common category bottlenecks. Inadequate physical, technical and social infrastructures undermined the ability and capacity both to modernise and expand production structures. Remarkably low productivity in agricultural sector and constraints put by small size of domestic markets have industrial production limited to number of goods which in return leaded the economy to import-dependency situation. Major bottlenecks in technical knowhow limited to design economically sound project which further deteriorated the capacity of absorbing external assistance. Most of the SAARC countries suffer from geographical or climatological handicaps such as landlockedness, remote insularity, drought and desertification and high disasters such as cyclones, floods, earthquakes all breed poverty in a self-perpetuating process.

The second category factors are related to the adverse development of world economic conditions. The SAARC countries occupy a very disadvantage position in world economy. Their share in the world trade and total financial flows is marginal. Exports of these countries consist traditional, primary commodities which too have very narrow range. The demand for these commodities is income - elastic and world market is in continuously over supply condition. Most of the economic activities are operated in subsistence level and isolation, monetized economy is increasingly on imports of technology, manufacturers and what is more critical for the supply of food. Their access to international capital markets is nil with limited foreign exchange earnings capacity resulted official development aids (ODA) very vital to their economy. Within SAARC countries also, traditional close countries' higher growth rates of GDP are dependent on markets which they cannot influence. As for Bhutan's case of high growth of GDP is attributed to the hydropower projects constructed by foreign aid, world economy is having technologi-

cal and structural change transforming and reshaping in new order thereby bringing new taste, style and way of life. But the SAARC countries remained out the process thereby moved toward further marginalisation.

The third category factors are related with domestic economic policy. Development objectives and plans to transform the social and productive basis have often been remained on paper. In the absence of adequate implementation mechanism and institutions it continued to be deferred and as resources taken scarce by policy makers sound environmental management was never created. Rural development neglected and rapid urbanisation process without building urban infrastructure put the unbearable burden on existing infrastructure which resulted low quality of life in urban population which further accelerated with uneven income distribution. An interesting thing common in all SAARC countries is that to adjust the external and fiscal imbalances, adjustment programmes, designed and implemented on the advice of multilateral financial institutions, have given rise to number of problems. As for example, the emphasis given to stimulate traditional export through devaluation have neglected the fact that world markets for the commodity is shrinking on the one side while on the other side it dominated with over supply. Here it will be very interesting to note that the five LDC countries which attained high growth rate (more than 6 percent) in 1980s have non-traditional items as the main source of foreign currencies two are SAARC countries (Bhutan, hydro-electric power; Botswana, diamonds; Cape Verde, transport facility, fish; Maldives tourism, garments; and Yemen migrants' remittance). This indicate rational for non-traditional commodity export development.

Similarly all the SAARC countries whenever financial constraint felt severe efforts were not made to increase the revenue by broadening tax base, reforming tax system and increasing the efficiency of tax collection as these were difficult to accomplish, government either rushed for external assistance or moved for expenditure cuts on development investment.

These factors made SAARC countries experiencing unsuccessful efforts to attain minimum adequate standards of living, having still their 51 percent of the people in extremely miserable condition (see for basic economic, social indicators annexed, appendix).

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Appendix

Table 1
Per Capita GDP and Population: Levels and Growth

	Per capita GDP in 1987 Dollars		Average Annual Growth Rate of Per Capita Real GDP (%)		Total Population (Million)	Annual Average Growth Rates (%)
	1987	1990	1970-80	1980-87	1987	1980-87
All Developing Countries	877	1001	3.0	0.2	2639.3	2.3
Developed Market Economy Countries	13522	14350	2.2	2.1	302.0	0.6

Source: UN, The Least Developed Countries 1989 Report.

Table 2
Share of Agriculture Sector, Exports and Imports of All Developing Countries 1987

Percentage share of labour force in agriculture	- 56
Percentage share of agriculture in GDP	- 19
Total exports (US $ million)	- 9108 (10.0)
Total imports (US $ Million)	- 17497 (19.2)
Export value	- 21.1
Import value	- 20.1

Note: Figures in parenthesis shows the percentage of GDP.

Source: United Nations.

Table 3
Commodity Structure of Exports and Imports by Main Category 1987 in Percent
All Developing Countries

	All Food Itemd	Agricultural Raw Materials	Fuels	Ores & Metals	Manufactured Goods	Unallocated
Exports	20.2	4.5	11.1	5.3	57.5	1.4
Imports	9.7	3.5	15.1	6.8	60.4	4.5

Source: UNCTAD, Handbook of International Trade and Development Statistics, 1988.

Table 4
Main Markets for Exports and Main Sources of Imports Relative Share of all Developing Countries 1988

(in percentage)

	Developed Market Economy					Eastern Europe	China	Total	Develping Countries	
	Total	EEC	Japan	USA & Canada	Other				OPEC	Other
Exports	65.6	21.6	9.6	28.5	5.8	5.1	4.2	24.3	4.7	19.5
Imports	6.37	22.3	16.0	16.8	8.8	5.3	4.4	26.6	8.2	18.5

Source: UNCTAD, Handbook of International Trade and Development Statistics, 1988.

Table 5
External Assistance and Trade Balance 1988

(In Millions of Dollars)

	Total Technical Assistance	DME	All Sources	Concessional Assistance DME	OPEC	Non-Concessional Assistance	Total Balance
All Developing Countries	1109.2		41754.2	37484.0	1859.1	29429.4	-11657

Source: UNCTAD Handbook of International Trade and Development Statistics 1988.

Table 4

Basic, Demographic, Health and Economic Indicators For SAARC Countries 1988

A. Basic	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
1. Area (Thousands of sq. km.)	144	47	3288	9*	141	796	66
2. Population (Million in Mid-1988)	108.9	1.4	815.6	0.26	18	106.3	16.6
3. Annual Population Growth Rate Percent 1980-88)	2.6	2.1	2.2	3.2	2.6	3.2	1.5
4. Literacy Rate (1985)	M 45 F 10	45 19	58 29	91	34 12	45 18	92 81
5. Percentage of Urban Population	16	5	27	20	9	32	21
6. Position Among the Poorest of the Poor in Ascending Order of GNP Per Capita	5	9	2	30	11	23	31
B. Demographic							
7. Crude Birth Rate (Per 1000 Pop.)	40	39	32	41	42	46	22
8. Crude Death Rate (Per 1000 Pop.)	15	17	11	8	15	13	6
9. Infant Mortality Rate (Per 1000 Live Births)	118	127	97	48	126	107	21
10. Total Fertility Rate	5.5	6.6	4.2	7.1	5.8	6.6	2.5
11. Life Expectancy (yr) at Birth	51	48	58	61	51	55	71
12. Woman of Child Bearing Age (15-49 yrs) as Percentage of Population	46	46	48	57	47	46	53
13. Percent of Population of Working Age (15-64 yrs)	52.1	56.7	58.4	65.8	54.9	52.4	65.9

	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
14. Percent of Population (Below 0-14 Age yrs)	44.7	40	37.2	34.2	42.7	45.0	32.8
15. Female Population (Per Hundred Males)	94	94	93	97	95	91	98
C. Health & Nutrition							
16. Population Per Hospital Bed	5000	1460	1300	1563	5700	3200	300
17. Access to Safe Drinking Water (Percentage of Population)	56	8	54	17	16	44	37
18. Daily Caloric Supply (Per Capita)	1899	2571	2189	2050	2052	2159	2385
19. Population Per Doctor	9700	23310	3700	7692	18395	2910	5520
20. Maternal Mortality (Per 100,000 Live Births)	600	1710	500	400	850	600	90
D. Economic							
21. Per Capita Income US $	170	180	340	410	180	350	420
22. GNP Per Capita Growth Rate (Av. Annual Percent) 1965-1988	0.4	0.3	1.8	2.3	0.5	2.5	3.0
23. GDP (Million US $)	19320	300	237930	96.2 (1986)	2860	34050	6400
24. GDP Growth Rate (Av. Annual Percent) 1980-88	3.7	6.2	5.2	9.2	4.7	6.5	4.3
25. Trade Balance (Million US $)	-1756	-53	-8900	-57	-442	-2159	-769
26. Balance of Payment (in Million US $ After Official Transfer Current Account Balance)	-289	-68	-6870	-386	-245	-1164	-404

	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
27. Total External Debt (Million (US $)	10219	68	57513	71	1164	17010	5189
28. Distribution of GDP (Percentage)							
A. Agriculture	46	44	32	27.4	46	26	26
B. Industry	14	28	30	15.7	17	24	27
C. Manufacturing	7	6	19	(Included in Industry)	6	17	15
D. Services	40	28	38	56.9	27	49	47
29. Percentage of Labour Force Engaged in Different Sector 1980-1988							
A. Agriculture	75	92	70	45	92	55	53
B. Industry (Including Manufacturing)	6	3	13	17	3	15	14
C. Services	19	5	17	38	5	30	33

*Maldives area coverage 90,000 sq.km.
Number of Islands: Inhabited 200
Uninhabited 990

Source: UNICEF, The State of the World's Children 1991.

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New Population Projection for Nepal (1986-2016)

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Population projection is defined as the numerical consequences of a selected set of assumptions with respect to fertility, mortality and migration (Walle, 1982: 713). The future size, structure and distribution of population are important elements in the formulation of social and economic programmes of a country. Besides, population projection also provides understanding of the momentum of the current demographic trends in a country which serves the different purposes of planning (United Nations, 1977: 14). The use of population projection in a country like Nepal which is experiencing serious economic and demographic problems is immense. This paper presents the future population scenarios for Nepal from 1981 to 2016.

Population projection are neither the forecast nor the prediction of future population size. Projections are thus merely a computational exercise based on the assumed future trends in fertility, mortality and migration which yields a population x year ahead. Projection can be wrong and misleading because no one can predict for the exceptional situation such as baby boom, war, natural calamities and catastrophe. However, this exercise serves the planners in the government and business by providing tentative information on future population size enabling them to frame future policies and programmes. The information on the number of people expected, their age distribution and the location where they are likely to live, serve sufficient time to the policy makers and planners to prepare for coming needs such as schools, roads, water supplies and housing. Similarly, business men may use this information in equipping themselves for likely demands of their products and service in future, much of which are likely to be age related, for example, infant formula may be concerned with the projected births while the life expectancy at birth may be concerned to the health care industries (Haub, 1987: 3).

Population can be projected in different ways according to one's needs. For instance, population projection can be prepared to obtain total population, population by principle geographical sub-division, special localities, residences class, urban and rural and by social and economic groups. The most frequently required and produced population projection are in terms of educational characteristics such as enrollment and attainment; economic characteristics such as economically active population, employment distributed by occupation or industry; and social aggregate like household and families (Shryock and Siege, 1976: 439). Projection are generally issued in multiple series of assumptions that

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are likely to serve a range of future scenarios. Yet, based on one series, the middle variant, is generally selected as the most plausible size of the future population.

NEED FOR THE POPULATION PROJECTION

The most complete and reliable source of information on population of a country is the census based on household information. However, organizing census quite frequently is not possible because of the huge involvement of the resources to complete the task. Moreover, information gathered in the census gives knowledge about the size of the population at the time of the census and do not highlight any past or future information on population. In order to meet the need for population information during the past or future, the population projection techniques are applied.

NATURE AND TYPES OF POPULATION PROJECTION TECHNIQUES

Generally, population dynamics is the consequences of the birth and death events experienced by the population in question. Events such as war, catastrophe, famine, epidemic or mass migration experienced by the population in question will no doubt create impact on the population dynamics and are important to be considered while projecting population. However, projection into the future do not attempt to speculate about such possibilities for these events are unforeseeable.

The population projection methods can be categorised into two types mathematical method and component method.

(a) Mathematical Methods

The mathematical method is categorised into three different methods- geometric growth rate, exponential growth rate and logistic method. These methods apply mathematical formula directly to the total population from census or censuses which are taken for the base year. The mathematical formula are expressed as:

1 $P_t = P_o (1 + r)^t$ Geometric curve with annual increase

2 $P_t = P_o e^{r t}$ Geometric curve with annual increase

3 (a) $P_t = \dfrac{\frac{1}{a}}{1 + \frac{b}{ae^{-rt}}}$ Logistic curve

3 (b) $P_t = \dfrac{K}{1 + e^{a+b\,t}}$ Logistic curve

where, r is the growth rate, t is the number of years and a and b are the constant and e is the base of the natural system of logarithms. The constant '1/a' or 'k' is the upper asymptote (Shryock and Siegel, 1976: 443).

Among the above mentioned methods of population projection, the simplest one, the one in which assumed growth rate for certain period of time, is applied. However, this method is useful to prepare a short term and total population projection. The growth rate can be assumed as "geometric growth rate" or "exponential growth rate". As geometric growth rate assumes the growth of population in fixed intervals, the result obtained by this method tends to produce bias result if used to project population experiencing changing growth rate over the time. The exponential formula also uses all the procedures similar except the value of "e" which is base of the natural logarithm and deals with the compound changes. However the results obtained using geometrical growth rate and exponential growth rate do not produce significantly different results if projection are made for short period. Furthermore, the limitation of both these methods are that they project only the total population size and do not give any idea on age specific size of the population. This is where the cohort-component method emerges.

(b) Cohort-Component Method

The cohort-component method is used for the demographic projections of national population. This method helps projecting population by age and sex considering the yearly changes in births, deaths and migration for each age groups.

The discussion in the preceding section of this paper reveals that the methods of population projection can be broadly classified into three categories - mathematical, economic and component method - which involve the separate projection of fertility, mortality and migration. In this paper the FIV cohort component method (Shorter and Pasta, 1974) is applied to project population of Nepal for the period 1986-2016. The west model regional life table (Coale and Demeny, 1966) is selected for this projection because the life expectancy at birth of Nepal is calculated by CBS (1987a) using median level mortality and the west model life table.

A Brief Review of Previous Population Projections for Nepal

As the first census in Nepal was prepared in 1952/54, there is no question of population projection before this period. But there were numerous population projections undertaken at the individual as well as institutional level after 1954. The first population projection was prepared by the Department of Statistics in 1958. This projection was limited to a 5 year period (1955-1960) and was based on the 1952/54 census population of Nepal. Again, the United Nations Secretariat in 1959 and Thakur in 1963 projected population of Nepal based on the 1952/54 census population. But both these projections under-estimated the population growth rate of Nepal (Rajbansi and Gubhaju, 1980: 191-103). The second round of population projections in Nepal was prepared separately by Central Bureau of Statistics (CBS), David, and Ramachandran. Among these, the projection prepared by David which covered the period 1970-1995 was widely used (Rajbansi and Gubhaju, 1980: 191-103). The base year of David's projection was 1970 which was derived from the projection made by Thakur. This projection was based on a series of assumptions,

such as, no change in fertility level (CBR 44.58 per 1000) to low 50 percent decline in fertility during the projection period (Rajbansi and Gubhaju, 1980).

In 1974 CBS prepared a set of population projections in Nepal for the period 1971-1986 using the cohort-component method. The base year population for this projection was taken from the 1971 census. Similarly, Rajbansi and Gubhaju prepared three sets of population projection for Nepal based on the 1971 census for the period 1977-2001 (Rajbansi and Gubhaju, 1980). Again the United Nations prepared population projections in 1973 which covered the period 1970-2000. At that time the age-sex distribution of the 1971 census was not available. So the estimated mid 1976 population total derived from the census was pro-rated according to the age-sex distribution estimated for 1970 in the United Nations projections as assumed in 1968 (United Nations, 1977: 53). All these projected populations when compared with the census results show that the actual rate of population growth in Nepal is higher than the estimated growth rate.

Recently the CBS has prepared a population projection based on the 1981 census population on four sets of fertility and mortality assumptions: high variant, low variant, medium variant and plausible variant, for the period 1981 to 2001 (CBS, 1987). The migration component of the population is considered as zero in all the population projections prepared in Nepal up-till now.

Base Line Assumptions

This population projection is based on various combinations of fertility and mortality assumptions. It is also assumed that catastrophes such as war, famines and epidemics will not occur during this projection period. The size of the base year population for this projection is 15022 thousand which is taken from 1981 census and is already smoothed by CBS (1986) to yield its adjusted age sex distribution. The sex ratio at birth is assumed to be 1.05. Further, the migration is assumed to be zero.

Fertility Assumptions

The Nepal fertility survey reported a TFR of 6.02 (NFPMCH, 1987) for 1986 which is assumed to be the TFR for the period 1981-1986 for the purpose of this projection. The pattern of age-specific fertility rate is calculated using the model age pattern of fertility in Asia. This calculation is presented in Appendix 1. In addition, the following specific assumptions are made considering the past and present fertility trends of Nepal.

High Variant, "Constant and slowly declining fertility":

The second stage of the demographic transition (Teitelbaum, 1975) explains a slow decline in mortality and constant fertility situation causing the population explosion. The demographic condition experienced in Nepal during the recent past, as noted, explains increasing life

expectancy at birth along with insignificant decline in the level of fertility. Nepal Fertility and Family Planning Survey (1986) suggest a declining trend of age-specific fertility rate during the past. The estimated TFR based on the data from Nepal Fertility Survey 1976 and Nepal Fertility and Family Planning Survey 1986 shows 6.38 and 6.02 respectively. The life expectancy at birth in Nepal during the past has been noted to be declining at the average rate of 0.84 year per annum. This phenomenon is almost similar to the second stage of the demographic transition as mentioned above. Thus the fertility rate for this population projection is assumed to be remained constant up to the year 2000 and will start to decline by the year 2001. This will lead the decline in TFR from 6.02 in 1986 to 5.0 by the year 2016.

Medium Variant, "Moderately declining fertility":

An official population programme in Nepal dates to 1965 (Joshi and David, 1982: 3). However, the family planning services along with maternal and child health services were offered only since 1968 with the founding of the Family Planning and Maternal Child Health Project within the Ministry of Health. This project administered family planning services in 52 of the 75 districts. Besides, Family Planning Association, a non-governmental organization, provides services in 17 districts (Schuler et al., 1985: 261). Despite these services, the contraceptive prevalence rate in Nepal was only 7 percent (National Commission on Population, 1983: 6). Thus, for the purpose of this population projection, it is assumed that the people of Nepal will practice various methods of birth control which will lead to a decline in TFR from 6.02 in 1986 to 4.02 by the end of the projection period.

Low Variant, "Rapidly declining fertility":

It is assumed that the government of Nepal will impose radical measures to control the population and the contraceptive prevalence rate will go up leading to a decline in TFR from 6.02 in 1986 to 2.80 by the end of the projection period.

Mortality Assumptions

The life expectancy at birth (combined for male and female) in Nepal has increased from 36.87 years in 1966 to 49.53 in 1981 (CBS, 1987). This shows an average gain in life expectancy at birth by .84 years per annum. On the other hand the Nepal Fertility Survey (NFPMCH, 1987) shows persistence of higher level of infant mortality rate corresponding to the year in Nepal for 1980, that is 113 deaths per 1000 live births. This indicates that there is still considerable room for further increase in life expectancy of the people of Nepal.

High Variant, "Slowly declining mortality":

As the socio-economic status of the majority in Nepal is increasing slowly due to the ever increasing population and slow pace of economic development, it is assumed that there will be slow decline in mortality which will add .25 years per annum to the life expectancy at birth of both sexes throughout the projection period.

Medium Variant, "Moderately declining mortality":

At present the life expectancy at birth of males in Nepal is higher than of females. Here, it is assumed that the life expectancy at birth for males will increase moderately by .50 years per annum from 1981 to 2001 and continue with a gain of .40 years per annum till the end of the projection period. But for females it will increase constantly by .50 years per annum throughout the projection period which will narrow down the difference in life expectancy at birth for females and males.

Low Variant, "Rapidly declining mortality":

It is assumed that the government of Nepal will implement radical measures to improve the socio-economic and health status of the people of Nepal. So it is expected that the male life expectancy at birth will increase by .75 years per annum and will slow down to .50 years per annum after it reaches 58.38 years. This will continue until it reaches 65.88 years after which it will increase by .25 years per annum throughout the projection period.

ANALYSIS

The summary result of the population projection presented in Table 1 shows that the size of the population of Nepal projected on the assumptions of high, medium and low variants respectively will reach 38.2 million, 36.1 million and 33.7 million at the end of 2016. The population projection prepared by CBS (1987) for the period 1981-2001 under the high, medium and low variant assumptions gives the total population of 26.1, 23.5 and 21.0 million respectively by the year 2001. The projec-

Table 1
Projected Population for Nepal, (1986-2016)

	Total Population ('000)			Share of Population Aged 0-14			Share of Population Aged 65+		
Year	High	Medium	Low	High	Medium	Low	High	Medium	Low
1981	15022	15022	15022	41.23	41.23	41.23	3.02	3.02	3.02
1986	17334	17400	17465	42.77	42.86	42.95	3.00	3.01	3.01
1991	19892	19901	19968	43.38	43.05	42.90	3.07	3.13	3.17
1996	22771	22552	22524	43.70	42.45	41.74	3.16	3.29	3.39
2001	26109	25443	25173	42.93	40.14	38.40	3.24	3.50	3.69
2006	29772	28664	27995	42.21	38.60	35.91	3.34	3.72	4.03
2011	33831	32274	30933	41.45	37.70	34.05	3.43	3.95	4.41
2016	38261	36179	33760	40.31	36.87	32.11	3.54	4.20	4.87

Note: Base year population is taken from CBS (1986)

tions in the present series under high, medium and low variant assumptions respectively give a total population of 26.1, 25.4 and 25.1 million for the year 2001. This clearly shows that the total population in this

series projected under the medium and low variant is higher in comparison to the CBS projection corresponding to the year 2001. However, the population projected under the high variant in current series is very close to the CBS projection under high variant assumptions. CBS (1987b), in addition to the high, medium and low variant assumptions, projected population of Nepal under plausible assumption in which the TFR is assumed to decline from 6.3 in 1981 to 4.8 by the year 2001 and the life expectancy at birth for male and female is assumed to increase from 50.88 years to 59.88 and from 48.10 years to 55.10 years between the period 1981 to 2001.

CBS (1987b) has assumed that the total fertility rate of Nepal will decrease from 6.3 in 1981 to 3.84 and 2.35 by 2001 for their respective medium and low variant assumptions. Both these fertility assumptions of CBS (1987) seem to be too optimistic for Nepal in the prevailing socio-economic milieu. These assumptions are made in conformity with perspective plan of His Majesty's Government which proposes to reduce the TFR from 6.3 in 1981 to 2.5 by the year 2000. However the total population projected by CBS (1987) under the plausible assumption which gives a population total of 24.58 million by the year 2001 seems to be a reasonable projection for Nepal in the prevailing fertility and mortality situation. Further, the population projected under the low variant assumption in this series in the year 2001 is less by 0.59 million than the total population projected under the plausible assumption by CBS. This comparison reflects that the low variant assumptions of this series of projection is almost similar to the projection prepared by CBS under plausible assumptions.

Table 1 also shows the share of population aged 0-14 and 65 + of total. Further it shows the decreasing share of young population given by all three: high, medium and low, variant assumptions over the projection period. This means that there will be more demand for employment over the projection period because of the higher proportion of working population. It is also noted that there will be little change in old age population over the projection period. In other word, the proportion of the population aged 65 + shows increasing trends over the projected period which indicates more demand for health and old age security for the increasing number of aged population. Besides, these data also present the decreasing trend of the dependency ratio over the projection period. The most interesting result of this projection exercise is that all these three different projections based on different assumptions of fertility and mortality combinations show that the population of Nepal will be more than double by the end of projection period.

The projection also shows that the total mid-year population projected under the low variant assumption exceeds the total mid-year population projected under the high variant assumption for the periods 1986-1991 and 1991-1996. This is due to the high momentum of the current demographic situation in Nepal which has overruled a substantial decrease in fertility and increase in life expectancy. But this is only for the short term.

Table 2 shows the crude birth rate, crude death rate and rate of natural increase for the period 1986 to 2016. The rate of natural increase (growth rate) is obtained by subtracting crude death rate from crude birth rate. Thus, the population dynamics can be considered as the consequences brought by the birth and death events. In Table 1, the size of the total population corresponding to the year 1986 obtained from medium and low variant assumptions appears to be greater than the high variant projection. It is so because the rate of natural increase corresponding to low and medium variant projection for the year 1986 turn to be greater than the rate of natural increase corresponding to the high variant projection, that is 28.6 < 29.4 < 30.1 (Table 2). Similarly, the relationship between the rate of natural increase corresponding to high, medium and low variant projection for the year 1991 are also same as it appeared in 1986. However, the rate of natural increase for the year 1991 is lower in comparison to the rate of natural increase corresponding to the year 1986. Apparent higher level of natural increase in the low and medium variant projection in comparison to the high variant projection is the effect of population momentum. It is thus clear that even after achieving a fall in the level of fertility in a society experiencing higher level of fertility, the size of the population tends to increase for short period.

Table 2
Crude Birth, Death and Growth Rate by Projection Series, (1986-2016)

	Crude Birth Rate			Crude Death Rate			Rate of Natural Increase		
Year	High	Medium	Low	High	Medium	Low	High	Medium	Low
1986	44.2	44.1	44.1	15.5	14.7	13.9	28.6	29.4	30.1
1991	42.0	39.5	37.9	14.4	12.7	11.1	27.5	26.9	26.8
1996	40.5	36.0	33.4	13.5	11.0	9.3	27.0	25.0	24.1
2001	40.1	33.8	30.1	12.7	9.7	7.8	27.4	24.1	22.2
2006	38.1	32.6	28.0	11.9	8.7	5.7	26.2	23.8	21.3
2011	36.7	31.6	26.2	11.1	7.8	6.2	25.6	23.7	20.0
2016	35.0	29.9	23.3	10.4	7.0	5.8	24.6	22.8	17.5

Source: Calculated from the 1981 population as base year.

PROBABLE CONSEQUENCES

The population projected in this series under the low variant assumption is very close to the projection prepared by CBS (1987) under the plausible assumption. So, both these series of projections are likely to be optimistic for Nepal in the present fertility and mortality milieu. Even this optimistic assumptions will increase the population density of the country and the demand for more jobs. This alerts the planner of Nepal to the likely problems in future which they need to think about, today. As Nepal is already facing difficulties in meeting basic needs

(food, cloths, shelter and fuel as defined by NPC, 1978) of its people the rapid increase in population may make the situation more worse. This statement can be supported by the findings of the NPC (1978) which shows that 40 percent of the total population of Nepal are below the poverty line. Beside the economic aspects, the planner also have to think about other social aspects such as health, education and service sectors for future population. However, as in most of the cases, the population projected under the medium variant series of this exercise is suggested to be the most plausible scenario of future size of population for Nepal which reflect more critical population explosion situation for Nepal in future.

CONCLUSION

This projection gives an account of the age-sex distribution and total population of Nepal for the period 1981-2016. As it is based on hypothetical assumptions, the population situation obtained on different series turns to be true only if the conditions of the assumptions happens. However, it gives a broad view of the possible demographic situation in Nepal for the period 1981-2016. Besides, it also helps the planners to anticipate the required resources to manage the probable consequences which may emerge due to the population dynamics. Considering both the prevailing socio-economic and demographic situation in the country and the possible demographic consequences presented by this projection, it hints that Nepal will have to face critical situation future. So it is suggested that work should begin as soon as possible to seek a better plan for the future considering present context.

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APPENDIX - I

CALCULATION OF AGE SPECIFIC FERTILITY RATE AND TOTAL FERTILITY RATE BASED ON ASSUMPTIONS

FERTILITY ASSUMPTIONS: HIGH VARIANT

Given that TFR = 6.02 for 1981-1986, assumed TFR for 2011-2016 is 5.00.

GRR = (100/205)* TFR or, GRR = (100/205)* 6.02 = 2.9366
GRR = (100/205)* TFR or, GRR = (100/205)* 5.00 = 2.4390

So the assumed 5 years decrease in GRR = 5* (2.9633-2.4390)/15 = 0.1659

YEARS	GRR	INTERPOLATED % ASFR USING TABLE 3 (ASIA PANEL) 15-19	20-24	25-29	30-34	35-39	40-44	45-49
1981-1986	2.94	7.6	22.6	26.2	22.2	14.3	6.2	0.9
1987-1991	2.94	7.6	22.6	26.2	22.2	14.3	6.2	0.9
1992-1996	2.94	7.6	22.6	26.2	22.2	14.3	6.2	0.9
1997-2001	2.94	7.6	22.6	26.2	22.2	14.3	6.2	0.9
2002-2006	2.77	6.8	22.2	26.3	22.6	14.8	6.4	0.9
2007-2011	2.61	6.1	21.7	26.5	23.0	15.1	6.6	1.0
2012-2016	2.44	5.4	21.3	26.8	23.5	15.4	6.6	1.0

TFR = GRR *205/100)	TFR	ASFR = (TFR/5) * (% ASFR/100) * 1000 15-19	20-24	25-29	30-34	35-39	40-44	45-49
1981-1986	6.02	92	272	315	267	172	75	11
1987-1991	6.02	92	272	315	267	172	75	11
1992-1996	6.02	92	272	315	267	172	75	11
1997-2001	6.02	92	272	315	267	172	75	11
2002-2006	5.68	77	253	299	257	168	73	10
2007-2011	5.35	65	232	284	246	162	71	11
2012-2016	5.00	54	213	268	235	154	66	10

Source: Calculated from the TFR suggested by NFPHCH (1987) and the assumed TFR by the year 2016 for this projection purpose.

FERTILITY ASSUMPTIONS: MEDIUM VARIANT

Given that TFR = 6.02 for 1981-1986. assumed TFR for 2011-2016 is 4.02

GRR = (100/205)* TFR or, GRR = (100/205) * 6.02 = 2.9366
GRR = (100/205)* TFR or, GRR = (100/205) * 4.02 = 1.96098

So, the assumed 5 years decrease in GRR = 5* (2.9633-1.96098)/30=0.1625

		INTERPOLATED % ASFR USING TABLE 3 (ASIA PANEL)						
YEARS	GRR	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1981-1986	2.94	7.6	22.6	26.2	22.2	14.3	6.2	0.9
1987-1991	2.77	6.9	22.2	26.3	22.6	14.7	6.4	0.9
1992-1996	2.61	6.1	21.7	26.5	23.0	15.1	6.6	1.0
1997-2001	2.45	5.4	21.3	26.7	23.5	15.4	6.7	1.0
2002-2006	2.29	4.8	21.1	27.2	23.9	15.5	6.6	0.9
2007-2011	2.31	4.2	21.0	27.6	24.3	15.7	6.4	0.8
2012-2016	1.96	3.8	21.0	28.4	24.7	15.4	6.0	0.7
TFR = GRR *25/100)			ASFR = (TFR/5) * (% ASFR/100) *1000					
	TFR	15.19	20-24	25-29	30-34	35-39	40-44	45-49
1981-1986	6.02	92	272	315	267	172	75	11
1987-1991	5.69	79	235	299	257	167	73	10
1992-1996	5.35	65	232	284	246	162	71	11
1997-2001	5.02	54	214	268	236	155	67	10
2002-2006	4.69	45	198	255	224	145	62	8
2007-2011	4.36	37	183	241	212	137	56	7
2012-2016	4.02	31	169	228	199	124	48	6

Source: Calculated from the TFR suggested by NFPMCH (1987) and the assumed TFR by the year 2016 for this projection purpose.

FERTILITY ASSUMPTIONS: LOW VARIANT

Given that TFR = 6.02 for 1981-1986, assumed TFR for 2011-2016 is 4.02

GRR = (100/205)* TFR or, GRR = (100/205) * 6.02 = 2.9366
GRR = (100/205)* TFR or, GRR = (100/205) * 2.80 = 1.36585

So, the assumed 5 years decrease in GRR = 5* (2.9633-1.36585)/30 = 0.26179

		INTERPOLATED % ASFR USING TABLE 3 (ASIA PANEL)						
YEARS	GRR	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1981-1986	2.94	7.6	22.6	26.2	22.2	14.3	6.2	0.9
1987-1991	2.67	6.4	21.8	26.5	22.8	15.0	6.5	1.0
1992-1996	2.42	5.3	21.3	26.8	23.5	15.5	6.6	1.0
1997-2001	2.15	4.3	21.0	27.5	24.2	15.6	6.5	0.9
2002-2006	1.89	3.5	21.5	29.3	24.8	14.8	5.5	0.6
2007-2011	1.63	2.8	22.8	32.2	25.3	12.9	3.7	0.3
2012-2016	1.37	2.5	25.6	35.0	24.4	10.3	2.2	0.0
TFR = GRR *205/100)		AFR = (TFR/5) * (% ASFR/100) *1000						
	TFR	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1981-1986	6.02	92	272	315	267	172	75	11
1987-1991	5.48	70	239	290	250	164	71	11
1992-1906	4.95	52	211	265	233	153	65	10
1997-2001	4.41	38	185	243	213	138	57	8
2002-2006	3.87	27	166	227	192	115	43	5
2007-2011	3.34	19	152	215	169	86	25	2
2012-2016	2.80	14	143	196	137	58	12	0

Source: Calculated from the TFR suggested by NFPMCH (1987) and the assumed TFR by the year 2016 for this projection purpose.

APPENDIX II

MORTALITY ASSUMPTIONS: HIGH VARIANT

YEARS	MALE Life expectancy at birth = 50.88 years in 1981	FEMALE Life expectancy at birth = 48.1 years in 1981
1981-1986	52.13	49.35
1987-1991	53.38	50.60
1992-1996	54.63	51.85
1997-2001	55.88	53.10
2002-2006	57.13	54.35
2007-2011	58.38	55.60
2012-2016	59.63	56.85

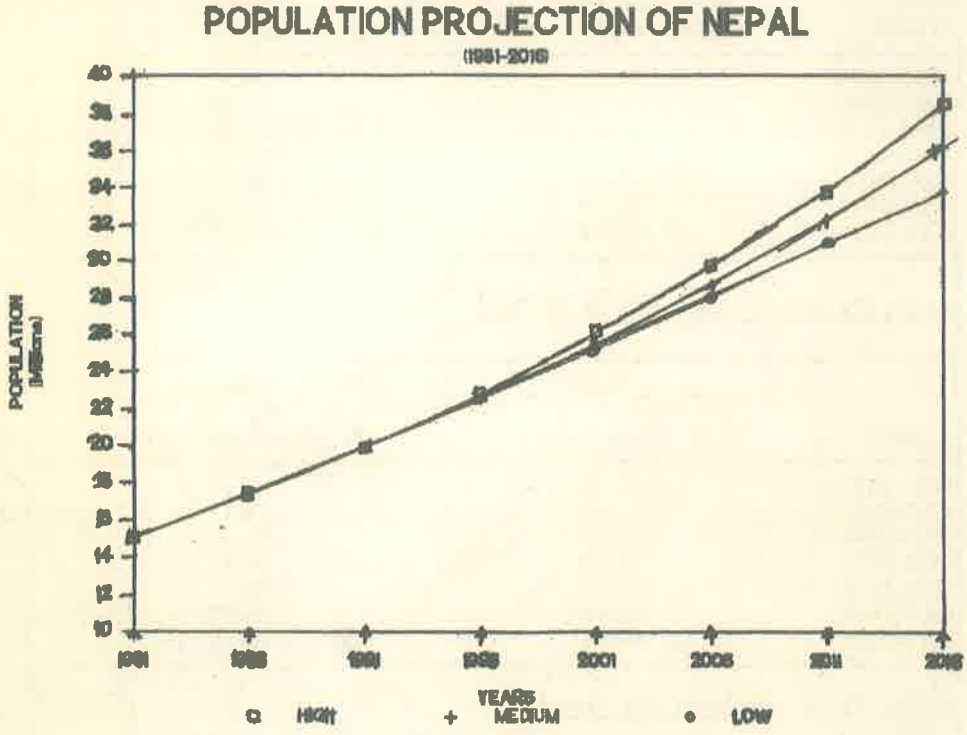
MORTALITY ASSUMPTIONS: MEDIUM VARIANT

YEARS	MALE Life expectancy at birth = 50.88 years in 1981	FEMALE Life expectancy at bihth = 48.1 years in 1981
1981-1986	53.38	50.60
1987-1991	55.88	53.10
1992-1996	58.38	55.60
1997-2001	60.88	58.10
2002-2006	62.88	60.60
2007-2011	64.88	63.10
2012-2016	88.88	65.60

MORTALITY ASSUMPTIONS: LOW VARIANT

YEARS	MALE Life expectancy at birth = 50.88 years in 1981	FEMALE Life expectancy at birth = 48.1 years in 1981
1981-1986	54.63	51.85
1987-1991	58.38	55.60
1992-1996	60.88	59.35
1997-2001	63.38	63.10
2002-2006	65.88	66.85
2007-2011	67.13	69.35
2012-2016	68.38	71.85

Source: Calculated from the life expectancy at births by sex as suggested by CBS (1987).


POPULATION PROJECTION OF NEPAL
(1981-2016)
POPULATION (Millions)
YEARS
HIGH
MEDIUM
LOW