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Implications of Age-Sex Structure and Future Requirements for the SAARC Countries: Vision 2050

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Abstract: The paper examines the following issues: (1) Population projection of (a) population characteristics, (b) fertility (TFR and NRR), and (c) life expectancy up to 2050; (2) Statistical analysis of population characteristics (mean age, median age, modal age, standard deviation age and skewness of age); (3) Changing the age-sex structure and demographic transition (1950-2050) of SAARC nations; (4) Demographic implications in the context of socio-economic development; and (5) Future resource requirement (Elementary school teacher, Health centre: PHCs; Food and drinking water, Clothing and Shelter). The findings are thatBhutan, India, Maldives, and Nepal will achieve the late third stage of demographic transition in the year 2050, while Afghanistan and Pakistan will enter the third stage. Except for Sri Lanka, other SAARC nations will continuously increase their working population, which has a high cash benefit to increase GDP and reduce the proportion of the BPL population. In SAARC countries, working population and GDP and BPL regression analysis have highly positive (r=0.68) and second case, moderately negative (r=-0.39). There will be a higher demand for education, food, safe water, proper houses, health and various other basic requirements and amenities in the coming decades, and therefore there will be stress on the resources in these countries.

Keywords: cohort component method, demographic transition, population projections, population resource relationship, SAARC Nations

The SAARC countries are witnessing a continuous increase in the number of people. However, the growth rate is decreasing, and the level of development of resources needs to be commensurate with the population growth rate. This situation is converting into low per capita income and lower socio-economic development.

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Planning of resources in developing regions needs a comprehensive analysis of present population characteristics, trends, and future dimensions. For the future development of any nation, several sectors may be identified, such as demographic character, level of employment, agricultural change, finance, social security, health, education, women empowerment, infrastructure, environment, rural development, urbanisation, governance, the impact of global economic scenario (Bhatt, 2001). The formulation of planning and policies of any country is almost related to human resource development; therefore, planning and future projection are required for better development of that country (Datta & Mohanty, 2005).

Normally, population characteristics, especially the age-sex structure, indicate the present status of society in the context of development. The population age structure reflects the overall scenario of the dynamic relations between the population and resources in an area. The number of children (below 14 years) and the number of adults (15-59 years) are considered the significant segments which decide the development and consumption of available resources. In the SAARC countries, most of the population is younger than in the developed nations.

Various attempts have been made to project the population by government organisations and some international agencies (UNDP, PRB) at the national and regional levels. Some studies related to population projections for India as a whole and for the states are of Kulkarni (2001), Bhat (2004), Kothari (2002), etc.

Again, it is time to emphasise population planning because it is increasing at a higher rate in most of the SAARC countries (excluding Sri Lanka). Some countries have TFR at an alarming stage (more than 3) and infant mortality at a higher level. High TFR and IMR reflect these countries' overall socio-economic scenario and adverse population–resource relationship. The diversity and type of projections are selected by the assortment of users' needs and requirements (Lutz et al., 1996). Dayson and Hanchate (2000) highlight a state-level analysis of India's population and food prospects for 2020 and conclude the real challenge related to various foodstuffs.

The present study is confined to a comprehensive planning vision of the SAARC countries for the year 2050. This study covers different aspects of the population, such as food, drinking water, clothes, residential houses, education, school teacher, health, etc.

From an economic perspective, the SAARC countries consist of a vast consumer market and have a large potential to create a boom in economic development. However, they need more technological advancement and more skill to produce sophisticated items of international standard. Therefore, these countries are in the developing stage, and the progress in economic development is relatively low.

Consequently, a high dependency ratio prevails in these countries, indicating low per capita income and mass poverty. A growing number of people will require more food, social amenities, and other necessities in the near future, such as schools, teachers, hospitals, doctors, etc.

Objectives of This Study

- To know the population dynamics and demographic transition in SAARC countries up to 2050.
- To estimate the future population and their requirements (such as water, food, clothes, shelter, number of required schools, teachers, hospitals, etc., for newborn children and future population) during the forthcoming decades, i.e., up to 2050.
- To understand and analyse the impact of demographic dividends on the economic scenario.

The Study Area

SAARC countries include eight South Asian countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka) for the economic and political cooperation and collaboration in this region. Three landlocked countries and three island countries with special geostrategic locations are in this group of countries. SAARC countries have only a three per cent share of the land but have a 19 per cent world population (PRB, 2015). They come under the world's low, lower middle-income group of countries except for Maldives (upper middle income) (World Bank, 2020-21). Four countries (Afghanistan, Bangladesh, Maldives and Pakistan) have Muslim populations as major religious groups; two countries (Bhutan and Sri Lanka) are the dominant Buddhist countries, while two countries (India and Nepal) have dominant Hindu populations.

Afghanistan has a rugged terrain with a low population density, and the country's economy was disturbed by the civil war 2001. Bangladesh has a flat plain with a high population density, and the economy is based on the agricultural sector. Bhutan has highly undulating highlands with hill slopes. India has a land of Himalayas, Deccan trap and Ganges – Indus Plain with one of the emerging economic hubs of the world.

Maldives is a group of low-lying coral islands with a tourist and fishery-based economy. Nepal is a country in the Himalayas, and its economy is primarily based on primary activities. Pakistan is the gift of the Indus Valley, and its economy is based on primary activities. Sri Lanka has island topography, and its economy is primarily based on tea, coffee, coconut and rubber.

Projection Inputs and Methods

This study is based on the cohort component method of population projections, which requires a detailed analysis of fertility and mortality trends to make future projections. These data are collected and analysed in this study based on different methods of computation and calculation.

(i) Population single-year age-sex data is obtained from the Preliminary census of Afghanistan, Bangladesh census 2011 (March 15 2011), Bhutan census 2005 (May 30 2005), Census of India, 2011, Maldives census 2006 (March 21 2006), Census of Nepal 2011 (June 22 2011), Pakistan census 2017, and Census of Sri Lanka, 2012 (March 20 2012) have been used as the base year population for population estimation and projection. Total fertility rate data has been taken from survey CEB and B12, Vital Registration 2012, CEB and B12, SRS 2011, vital registration 2012, Maternity Histories 2014, Maternity Histories 2012, and Vital Registration 2010 alphabetically. UNDP data have been used to estimate future life expectancy patterns and net out-migration rates.

(ii) Infant mortality rate data have been obtained from Maternity Histories 2011, Maternity Histories 2014, Maternity Histories 2012, vital registration (AHS, 2011-12), Maternity Histories 2009, Maternity Histories 2014, Maternity Histories 2011 and vital registration 2010 in alphabetical order. Neo-natal, infant, under-five mortality and maternal mortality ratio is the indicator of mortality which reduces the population by stopping the occurrence of death and is a component of population dynamics.

(iii) Contraceptive prevalence rate data has been collected from UNWCU 12 (2011), DHS 2011, UNWCU 12 (2006), UNIAIDS 2015, DHS 2009; DHS, 2011; DHS 2007 and UNWCU 12 (DHS) 2007 in alphabetical order. Normally, the contraceptive prevalence rate reduces fertility, which helps to stabilise the population and achieve demographic dividends.

This method makes specific assumptions about the future levels and patterns of fertility, mortality and migration and applies them to the age-sex structure of the base year population. The technique has been applied with the help of SPECTRUM population projection software (DEMPROJ, LIST and FamPlan).

In this study, middle-level variants have been used to protect the population of the SAARC countries. After population projection, the requirements of different items have also been estimated, such as water, food, cloth, shelter, health centres, schools, teachers, etc. The water requirement based on per person per day is 3 litres for males and 2.2 litres for females considered in this study (*www.mayoclinic.org/ Mayo Clinic*). Similarly, per person per day, foodstuffs are considered 700 gm. Shelter requirements considered two rooms (18 m2) for five persons, while per person's clothes requirement is 7 meters per year. For other requirements such as schools, teachers, health centres, etc., the Government of India norms have been applied as a standard for all SAARC Countries for comparison.

Results and Discussion

Population and its Characteristics in SAARC Nations

Population Size and Growth

SAARC countries have 23.55 per cent of the world's population on 3.5 per cent of the earth's land (United Nations, 2015). Out of four persons in the world, one was living in SAARC nations and covers 1.72 billion of the world population (UNDESA, Population division 2015); this population will reach 2.41 billion and would be 24.85 per cent of the world population (9.7 billion) in the year 2050. India's total population in the year 2050 will be equivalent to that of the total population of SAARC countries in 2015. During 2050, the population of Afghanistan and Pakistan will increase by 77.78 and 72.48 per cent of their 2015 population, respectively (Table 1), which indicates that population pressure on resources will be in alarming stage in these two countries. Sri Lanka is the only country which will record less than a 1 per cent increase in its population from 2015 to 2050.

Table 1

Population Size (in millions) of SAARC Countries

Year	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
2015	32.02	158.50	0.76	1297.27	0.36	28.04	199.42	20.34
2020	36.09	168.76	0.81	1384.58	0.39	30.17	220.90	20.79
2025	40.02	178.02	0.85	1466.28	0.41	32.15	242.32	21.04
2030	43.85	185.98	0.89	1540.82	0.43	33.84	263.15	21.15
2035	47.52	192.64	0.92	1606.90	0.45	35.28	283.25	21.16
2040	50.96	198.15	0.95	1665.99	0.47	36.63	302.72	21.06
2045	54.12	202.49	0.97	1720.33	0.49	37.94	321.48	20.83
2050	56.93	205.51	0.99	1768.68	0.50	39.09	338.97	20.48

Source: Calculated by the Authors

According to our estimates, the exponential annual growth rate of the population in the SAARC countries during 2015–2050 will be 0.96. Now, population growth rates are different in SAARC countries. 2015 it varies from 2.5 in Afghanistan to 0.47 in Sri Lanka. On the other hand, this variation will reach between 0.95 and –0.39 in 2050. Sri Lanka will achieve zero growth in 2030, while Bangladesh and Bhutan will reach this stage in 2040, and India, Nepal and Maldives will reach it in the year 2050. On the other hand, Pakistan and Afghanistan will be far from zero growth even in the year 2050 (Fig. 1).

Afghanistan's total population will increase by 77 per cent, whereas Pakistan's will increase by 72.48 per cent in the upcoming 35 years (Table 1). In 2050, Pakistan's annual population growth rate will be four times higher than Bangladesh, three times higher than Sri Lanka and Bhutan, and two times higher than India, Maldives and Nepal. Afghanistan's annual population growth rate will be the same as in Pakistan during 2050.

Child Population (Below four years)

The child population is economically dependent but needs more care for its development because it is the future of any country. The child population in Afghanistan was 4.76 million in 2015 (14.87 per cent), the highest among all the SAARC countries. Similarly, a very high child population has also been seen in Pakistan (12.91) and Maldives (10 per cent). India (9.39 per cent), Bangladesh (9.37 per cent) and Nepal (9.77 per cent) have a moderate proportion of the child population. On the other hand, Bhutan (7.89 per cent) and Sri Lanka (7.82 per cent) have the lowest proportion as they controlled their TFR among SAARC nations in the year 2015 (Table 2).

Table 2

Child and School Age (Millions) Population of SAARC Countries

Child and School Age Population																
Year	Afghanistan		Bangladesh		Bhutan		India		Maldives		Nepal		Pakistan		Sri Lanka	
	CP	SAP	CP	SAP	CP	SAP	CP	SAP	CP	SAP	CP	SAP	CP	SAP	CP	SAP
2015	4.76	9.08	14.85	30.94	.060	0.14	121.80	248.09	.036	.062	2.74	6.20	26.06	45.85	1.59	3.35
2020	5.22	9.31	15.75	29.84	.070	0.13	133.11	244.04	.037	.069	3.27	5.67	27.96	49.17	1.52	3.22
2025	5.19	9.77	15.09	30.39	.070	0.14	131.46	252.33	.032	.074	3.18	5.97	28.38	53.08	1.42	3.03
2030	5.18	10.22	14.23	30.65	.065	0.14	128.71	262.32	.029	.071	2.95	6.41	28.40	55.48	1.37	2.86
2035	5.14	10.20	13.50	29.14	.062	0.13	125.13	258.28	.028	.062	2.74	6.09	28.48	56.00	1.35	2.71
2040	5.06	10.18	13.11	27.57	.060	0.13	123.34	252.14	.030	.057	2.71	5.65	28.90	56.17	1.31	2.64
2045	4.94	10.08	12.84	26.46	.060	0.12	123.75	246.84	.031	.058	2.75	5.41	29.36	56.72	1.24	2.58
2050	4.80	9.88	12.50	25.81	.061	0.12	123.02	245.56	.031	.060	2.70	5.43	29.54	57.65	1.15	2.46

Source: Calculated by the Authors.

Note: CP-Child population, SAP-School age population.

In the year 2050, Pakistan will have the highest child population (9.06 per cent) among SAARC nations, followed by Afghanistan (8.43 per cent). Bangladesh (6.08 per cent), Bhutan (6.16 per cent), Maldives (6.20 per cent), India (6.96 per cent), and Nepal (6.91 per cent) will have a low share of the child population in 2050. Sri Lanka will have a 5.62 per cent child population in 2050, and it will be the lowest share among SAARC nations. India's proportion of child population will gain more than Bhutan and Maldives in the coming 35 years (2015 to 2050). Out of eight SAARC countries, the total child population in four countries (Afghanistan, Bhutan, India and Pakistan) will increase. In comparison, the other four countries (Bangladesh, Maldives, Nepal and Sri Lanka) will be decreased. Pakistan will add more than 5.09 million (i.e., more than the sum of Bhutan, Nepal and Sri Lanka's child population in 2015) in the next 35 years, which will create constraints for the development of this country.

School Age Population (5- 14 years)

This is also an economically dependent population and needs more attention towards enhancing mental ability and cultural development. This segment of the population, i.e., the school-age population, has high pressure in Afghanistan (28.36 per cent), Nepal (22.11 per cent) and Pakistan (21.94 per cent) in 2015.

On the other hand, three countries had moderate pressure, and two had comparatively low pressure on the school-age population in 2015 in the SAARC countries. In four SAARC countries (Afghanistan, Bhutan, India and Nepal), the school-age population will be increased by 2030 and will decline. These four countries will add another 15.8 million of the school-age population only in the upcoming 15 years, i.e., that population will be equal to the total population of Ecuador. The Maldives will have the highest child population in 2025, and then it will decline. It is interesting to mention here that in Pakistan, the school-age population will increase while in Sri Lanka's school-age population will decrease from 2015 continuously. It indicates that during 35 years (2015 to 2050), the school-age population will reduce to 1.09 million in SAARC countries, equivalent to Bhutan and Maldives's present population (1.12 million, 2015).

Working Age Population and Dependency Ratio (15 to 64 years)

Working age population indicates any region's production output and development. An increasing working-age population indicates more human resources available for the working sector. In Afghanistan, the working age population was 17.34 million (54.15%) in the year 2015, and it will reach up to 39.03 million (68.56%) in the year 2050 (Table 3), i.e., 225.09 per cent of the 2015 working population.

The working-age population will continuously grow to 2050 in four SAARC countries (Afghanistan, India, Nepal and Pakistan). The working population's absolute number will increase to 2045 in Bangladesh and Bhutan, Maldives up to 2040 and Sri Lanka up to 2025.

Table 3

Working Age Population (in millions)

Year	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
2015	17.34	104.66	0.52	852.58	0.24	17.48	118.93	13.47
2020	20.56	114.31	0.56	915.81	0.26	19.32	134.15	13.68
2025	23.88	121.72	0.59	972.38	0.28	20.86	149.45	13.75
2030	27.04	126.99	0.62	1019.35	0.30	22.04	165.53	13.63
2035	30.47	131.97	0.64	1,071.70	0.32	23.62	182.55	13.43
2040	33.65	135.53	0.66	1,115.69	0.33	24.94	198.71	13.11
2045	36.51	136.79	0.66	1,148.27	0.33	25.90	213.11	12.67
2050	39.03	136.24	0.65	1,167.39	0.33	26.45	225.47	12.29

Source: Calculated by the Authors

In 2015, the highest working-age population was in Bhutan (68.42 per cent) and the lowest in Pakistan (60.54 per cent). While in 2050, the situation will change when Afghanistan (68.56 per cent) will be the highest, and Sri Lanka (60.01 per cent) will be the lowest among SAARC nations. During this period, the dependency ratio was highest in Afghanistan (0.85, i.e., one of the highest in the world) and lowest in Bhutan (0.46), while in 2050 highest and lowest dependency ratio will be in Afghanistan (0.46) and in Sri Lanka (0.67) respectively (Fig. 2). The highly growing working population will pressure employment generation in Afghanistan.

Women in Reproductive Age (15-49 years)

Women of reproductive age (15-49) determine the future population by their reproductive capacity. Normally, a woman can biologically produce 17 children in her total reproductive period, but the reproduction rate (TFR) depends on the mean age of marriage, median age at first birth and use of contraceptive methods. It is interesting to note here that the share of women of reproductive age has decreased since 2015 in Bangladesh, India and Sri Lanka. Still, the absolute number will start decreasing from 2020 in Sri Lanka to 2040 in Bangladesh, while in India, the absolute number will increase up to 2050 continuously (Table 4).

Table 4

Reproductive Age Women population (in per cent)

Year	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
2015	22.95	28.01	26.32	25.67	27.78	27.74	24.88	25.71
2020	24.27	27.80	27.16	25.53	28.21	28.07	25.04	25.20
2025	25.41	27.34	27.06	25.27	26.83	27.74	25.25	24.81
2030	26.04	26.58	25.84	24.76	27.91	26.92	25.51	23.97
2035	26.79	25.97	26.09	24.47	26.67	26.79	25.75	23.20
2040	27.24	25.23	24.21	24.08	23.40	26.24	25.68	22.55
2045	27.31	24.37	23.71	23.63	22.45	25.12	25.41	22.08
2050	27.05	23.43	22.22	23.13	22.00	23.64	25.11	21.68

Source: Calculated by the Authors.

Table 5

Old Age Population (in per cent)

Year	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
2015	2.59	5.09	5.26	5.77	5.56	5.78	2.09	9.54
2020	2.74	5.24	6.17	6.62	5.13	6.30	2.14	11.40
2025	2.95	6.08	7.06	7.51	7.32	6.66	2.34	13.55
2030	3.22	7.59	7.87	8.47	6.98	7.24	2.62	15.56
2035	3.56	9.36	9.78	9.45	8.89	8.02	2.89	17.34
2040	4.06	11.08	10.53	10.49	10.64	9.06	3.17	18.99
2045	4.79	13.03	13.40	11.71	14.29	10.20	3.53	20.88
2050	5.64	15.06	17.17	13.16	18.00	11.51	4.00	22.31

Source: Calculated by the Authors.

On the other hand, in Afghanistan, the reproductive age of women will also increase continuously up to 2050. In Bhutan, Maldives and Nepal, it will peak in 2020, while in Pakistan, it will have the highest share of that age group in 2035. India will add 77 million reproductive-age women in the upcoming 35 years, which will be two times higher than the present population of Canada (36 million, PRB 2016). SAARC countries will add 120 million reproductive-age women in the upcoming 35 years, more than the present population of northern Europe (103 million).

Old Age Population (Above 65 years)

The share of the old age population was very low in Afghanistan (2.59 per cent), low in Pakistan (4.61), moderate in Bangladesh (5.09), Bhutan (5.26), India

(5.77), Maldives (5.56) and Nepal (5.78); while high in Sri Lanka (9.54) in the year 2015. In the upcoming 35 years, there will be a phenomenal increase in the share of the old age population in SAARC nations except Afghanistan and Pakistan. This indicates a fast-growing life expectancy in the country due to an increase in health facilities and their accessibility. This phenomenal increase indicates more requirements for old-age welfare programs in the near future. Bangladesh, Bhutan and Maldives will record a 300 per cent increase in their share of the old age population during 2015-2050.

Age Structure and Demographic Transition Model

The age structure of India's population in 2011 indicates the wide base and smallest vertex in the age pyramid, normally found in developing countries (Fig. 3). Afghanistan reached its second stage in 2000 and 2030. It will reach a late second stage in 2030 and 3rd in 2045. Bangladesh reached the second stage in 1990. After that, the transition was very fast and will reach 3rd in 2040 and late 3rd in 2050. Bhutan's demographic transition has been very fast since 2000 due to an increase in life expectancy, and it will reach the 4th stage of transition in 2050. While in the year 2050, in India, the age pyramid will be bell-shaped, which is now prevailing in developed countries (Fig. 4). India's demographic transition started the second stage in 1990-95, and in 2010-15, it reached late second stage while it will be in the 3rd stage in 2030. This stage will also continue up to 2050. The condition of Maldives has been doing extremely well since the 90s due to a very high rate of fertility decrease, and it will reach the third stage of demographic transition after 2040. Nepal is across the second stage of demographic transition after 1990 and will reach 3rd stage after 2040. Pakistan has recorded very slow progress in the demographic transition. It crossed the second stage after 2000 and will reach a late second stage in 2050 due to high fertility and low life expectancy. Sri Lanka has done the best among SAARC nations; it will be reached the 4th stage of demographic transition in 2045.

Statistical Analysis of Population Characteristics

Mean Age of Population

India's mean age (26.33 years, 2001) was very low when compared with the developed countries (42 to 45 years); however, it is growing continuously and will reach up to 37.10 years during 2050 (Table 6). Moreover, the male mean age has always been lower than the female mean age in all the SAARC nations. Only Sri

Lanka had a mean age of more than 30 in 2015, while Pakistan and Afghanistan have recorded ages of around 25. In 2050, Sri Lanka will reach their mean at 42.51 years, the highest among SAARC nations. Bhutan, Maldives, and Sri Lanka will have a mean age of more than 40, while Bangladesh, Nepal and India will have nearly 40. On the other hand, Maldives and Bhutan will be noticed the highest increase (+13 years) due to increasing life expectancy and low birth rate. In Pakistan, this increase will be lowest (only four years) due to high fertility, accumulation of a larger child population and less life expectancy (Table 6).

Median Age of Population

The highest median age was 33.71 years in Sri Lanka, followed by India (29.33), Bhutan (28.85), Maldives (28.37), Bangladesh (28.33), Nepal (27.46), and Pakistan (21.68), while Afghanistan (21.71) was on the last position in 2015. In 2050, Sri Lanka will also be in the top position. Bhutan and Maldives will reach nearer to Sri Lanka's median age. Males are younger than females due to higher mortality among males in lower age groups, and females have more survival rate.

Modal Age of Population

It is remarkable to note here that the Indian modal age was extremely low (below 4 years) in 1961, and it reached 21.68 years in 2015 and will reach up to 37.09 in the year 2050. In 2015, Sri Lanka's modal age was recorded highest (29.28 years) and lowest in Afghanistan (8.77 years) and followed by Pakistan (15.41 years). Afghanistan's modal age in 2015 was equivalent to that of India in 1970. Maldives (56.50yearsr) will have the highest modal age in 2050, while Sri Lanka (43.36 years) will slip down to third position (after Bhutan), and that will be equivalent to Bangladesh (43.29 years) and Nepal (43.12 years). This increase in Maldives and Bhutan in modal age indicates that the population will tend towards the middle age population from the younger population. A male and female gap is nominal in all the SAARC nations, and the female modal age is higher than the male, except in Bhutan (Table 6).

Standard Deviation of Age

The Standard Deviation (SD) of the age of the Indian population started growing fast in 1991; it reached 29.33 years in 2001 and will be 37.84 in 2050. In 2015, the lowest SD was recorded in Afghanistan (21.71) and the highest in Sri Lanka (33.71), while it will reach up to 31.30 in Afghanistan and 42.51 in Sri Lanka in 2050.

The highest increase will be recorded in the Maldives and the lowest in Pakistan. Male–female deferential in SD will be minimised in all the SAARC nations (Table 6).

Skewness of Age Groups

The skewness of the population of SAARC nations also measures the asymmetry of the curve. A zero-skewed curve means that the peak of the curve in the age group of 45-50 years is at an advanced stage of development. All the SAARC country's curves are positively skewed means that the bulge of the population is towards younger size, but they varied from very high in Afghanistan (0.60) to low in Sri Lanka (0.13) in 2015. Indian population skewness was 0.40 in 2001, and it will reach 0.02 in 2050; that indicates that the population pyramid will be bell-shaped and at the stage of population stabilisation. Maldives (-0.37) and Bhutan (-0.19) will have a high negative skewed curve, which indicates towards old age population, followed by Nepal (-0.12), Bangladesh (-0.09) and Sri Lanka (-0.02) in 2050, while in Pakistan and Bangladesh, it will reach in that position after 2070 (Table-6).

Fertility of Population

Total Fertility Rate (TFR)

Fertility is one of the most important indicators of population growth. In SAARC, the the pace of fertility curbing is quite satisfactory, except in Afghanistan and Pakistan. During 2050, Bhutan, Sri Lanka and Maldives will reach the below-replacement level of fertility, while Bangladesh, India and Nepal will be very near to this stage. The speed of decline was highest in Bangladesh, where fertility declined from 6.6 children per woman in the 1970s to 2.13 in 2015. In the Maldives, the fertility transition sped up during 1990, reaching 2.07 in 2015. This high-speed decline in TFR resulted in a rapidly growing working-age population in these countries (Table 3). TFR was highest in Afghanistan (4.57) and lowest in Bhutan (1.98) among the SAARC nation in 2015 (Table 7). Due to the course of time, TFR will have the lowest in Bangladesh in 2050, which will be the outcome of increasing acceptance of modern contraceptives. Pakistan will have the highest TFR among all SAARC nations in 2050.

Among the eight SAARC countries, three countries (Bhutan, Maldives and Sri Lanka) recorded below the replacement level of fertility in the year 2015, and there will be six countries (Bhutan, Maldives, Sri Lanka, Bangladesh, India and Nepal) in 2050 in this category, except Afghanistan (2.17) and Pakistan (2.35).

Table 7

Fertility and Modern Contraceptive Prevalence Rate

Year	Afghanistan		Bangladesh		Bhutan		India		Maldives		Nepal		Pakistan		Sri Lanka	
	TFR	MCPR	TFR	MCPR	TFR	MCPR	TFR	MCPR	TFR	MCPR	TFR	MCPR	TFR	MCPR	TFR	MCPR
2015	4.57	22.82	2.13	52.42	1.98	65.85	2.39	49.4	2.07	28.51	2.17	43.95	3.68	24.47	2.06	52.93
2020	4.08	34.98	2.17	54.79	2.15	67.9	2.49	51.27	2.08	34.62	2.37	47.31	3.43	26.25	2.04	54.45
2025	3.44	44.14	2.04	56.74	2.02	69.53	2.38	52.89	1.94	38.76	2.24	49.66	3.13	30.04	1.98	55.66
2030	3	50.37	1.95	58.25	1.93	70.67	2.29	54.24	1.85	41.37	2.14	51.34	2.91	33.60	1.93	56.6
2035	2.69	54.74	1.88	59.31	1.87	71.37	2.21	55.39	1.82	42.51	2.07	52.45	2.72	33.60	1.9	57.3
2040	2.46	57.98	1.84	59.99	1.85	71.64	2.14	56.32	1.81	42.55	2.03	53.16	2.57	33.60	1.88	57.72
2045	2.29	60.49	1.82	60.33	1.85	71.61	2.09	57.08	1.83	42.11	2.01	53.46	2.44	33.60	1.86	58.02
2050	2.17	62.11	1.81	60.38	1.86	71.45	2.06	57.57	1.85	41.61	2.01	53.52	2.35	33.60	1.85	58.17

Source: Calculated by the Authors.

Note: TFR- Total Fertility Rate, MCPR-Modern contraceptive prevalence Rate.

Life Expectancy

Life expectancy is the mean number of years remaining at a given age, assuming age-specific mortality rates remain at their most recently measured levels (Shryock & Siegel, 1973). Afghanistan has the lowest life expectancy due to the civil war and post-war effects. Maldives and Sri Lanka have comparatively high life expectancy, where the first one is because of economic upliftment, and the second one is due to the socialist health policy of Sri Lanka. Due to improving health facilities in all the SAARC countries, life expectancy will continuously increase until 2050. In six countries (Bhutan, Maldives, Sri Lanka, Bangladesh, India and Nepal), life expectancy will reach above 75, which indicates the growing pressure of the old age population in these countries (Table 8).

Table 8

Life Expectancy and Net Reproduction Rate

Year	Afghanistan		Bangladesh		Bhutan		India		Maldives		Nepal		Pakistan		Sri Lanka	
	LE	NRR	LE	NRR	LE	NRR	LE	NRR	LE	NRR	LE	NRR	LE	NRR	LE	NRR
2015	60.9	1.91	72.2	0.99	70.0	0.91	68.5	1.05	77.0	0.98	70.2	1.00	66.5	1.66	75.2	0.99
2020	62.5	1.74	73.9	1.02	71.6	1.00	70.0	1.11	78.2	0.99	71.9	1.11	67.3	1.63	76.1	0.98
2025	63.8	1.49	75.1	0.97	72.9	0.94	71.3	1.08	79.1	0.93	73.1	1.05	68.1	1.53	77	0.95
2030	65.1	1.32	76.0	0.92	73.9	0.91	72.5	1.05	80.0	0.89	74.3	1.01	68.8	1.43	77.8	0.93
2035	66.1	1.20	76.8	0.89	74.9	0.88	73.5	1.02	80.8	0.87	75.3	0.98	69.5	1.45	78.7	0.92
2040	67.0	1.11	77.6	0.88	75.9	0.88	74.4	1.00	81.6	0.87	76.4	0.96	70.1	1.46	79.5	0.91
2045	67.9	1.04	78.3	0.87	76.7	0.88	75.3	0.98	82.3	0.88	77.3	0.95	70.8	1.47	80.3	0.90
2050	68.5	0.99	78.9	0.87	77.4	0.89	76.1	0.96	82.9	0.89	78.0	0.95	71.3	1.48	81.0	0.90

Source: Calculated by the Authors.
Note: LE-Life Expectancy, NRR- Net Reproduction rate

Net Reproduction Rate (NRR)

The net reproduction rate measures the extent to which a cohort of newly born girls will replace their mothers under pre-determined fertility and mortality schedules (Bhende & Kanitkar, 2014). In Afghanistan, NRR was 1.91 in the year 2015, which indicates a higher number of children in the near future. If the TFR is the same, it will contribute more to population growth by increasing the number of reproductive women. However, there is a hope that in SAARC countries, NRR will come down and reach a level of nearly one, except Pakistan, in 2050 (Table 8).

Demographic Dividend and Development

Demographic change implies economic development, but the sketch needs to be seen in previous studies. Demographic change has undergone a demographic transition, i.e., from a higher child-age population with high TFR and IMR converted higher working-age population with very low TFR and IMR. This structural change from a highly dependent population to a high working population is called a demographic dividend. SAARC nations will experience a significantly faster increase in their working age share between 2015 and 2050 than between 1960 and 2005 (Bloom et al., 2011). A cross-country regression analysis of the contribution of demographic change to economic growth that takes into account an array of variables, including economic openness and the growth rate of the working-age share of the population from UN data, has been recorded in some of the studies (Bloom et al., 2011)

SAARC countries will add 120 million reproductive-age women in the upcoming 35 years, i.e., more than the total population of northern Europe (103 million). SAARC nations have huge reproductive health sector markets; therefore, the health economy should be strong to fulfil their requirement. In 2015, the dependency ratio had highest in Afghanistan (0.85, i.e., one of the highest in the world) and lowest in Bhutan (0.46) among SAARC nations. In 2050, the highest and lowest dependency ratio among SAARC nations will be in Sri Lanka (0.67) and Afghanistan (0.46), respectively. Consequently, a growing working population will pressure employment generation in Afghanistan (Table 9).

Table 9

Correlation Matrix of Demographic Dividend and Development

	GDP	Growth rate	Dependency rate	BPL	Carbon emission	Electricity	Renewable energy	Arable land
GDP	-	-0.328	-0.617	-0.758	-0.069	0.730	-0.212	0.762
Growth Rate	-0.328	-	0.779	0.427	-0.110	-0.344	-0.600	0.043
Dependency Rate	-0.617	0.779	-	0.406	-0.148	-0.596	-0.346	-0.372
BPL	-0.758	0.427	0.406	-	0.198	-0.808	-0.208	-0.361
Carbon Emission	-0.069	-0.110	-0.148	0.198	-	0.051	-0.105	-0.194
Electricity	0.730	-0.344	-0.596	-0.808	0.051	-	0.099	0.501
Renewable energy	-0.212	-0.600	-0.346	-0.208	-0.105	0.099	-	-0.527
Arable Land	0.762	0.043	-0.372	-0.361	-0.194	0.501	-0.527	-

Source: Calculated by the Authors.

Except for Sri Lanka, other SAARC nations will increase their working population continuously, and that has a high cash benefit to increase GDP and reduced proportion of BPL population (Asian country working age population and GDP and BPL regression analysis have highly positive (r=0.68) and second case moderately negative (r=-0.39) from PRB data). Per capita, carbon emission has increased due to the fast growth of GDP and fulfilment of the population requirement, proven in this study. In SAARC nations, education investment must shift from elementary to higher and technical education to utilise the working population as a human resource. More health centres will be needed for the growing population, and intensive care will be needed for the growing old age population. For the bulk of the new population, huge amounts of food, drinking water, and houses will be required, which will strain the existing land and water resources.

This is a huge world economy market; either SAARC nation manufactures its own and develops its economic policy. Consequently, these countries will emerge as the world's biggest economic hub.

Future Requirement of Resources

Elementary School Teacher Requirements

One of the important sustainable development goals is to fulfil a cent per cent elementary (6-14 years) school education. To fulfil this dream, SAARC nations have implemented various programs to improve the situation. India has already implemented the scheme for elementary education, i.e., "Education for all." The government of India has also set a norm for the student-teacher ratio, i.e., 30 students per teacher in a school of elementary age. Considering this T-S ratio, there was a requirement of 11.46 million teachers for this population segment. By 2050, there will be 12.17 million children in these countries, requiring 0.71 million teachers (Table 10).

Now, the population in the age group of elementary education is almost stable, while the population in the higher education age group is increasing. Consequently, the focus will be on higher education. On the other hand, in Pakistan and Afghanistan, the school-going population will continuously increase; therefore, school teachers will be required until 2050. In Bangladesh, Sri Lanka and Nepal, the need for elementary school teachers will decrease continuously till 2050, and there will be a resource shift from elementary to higher education; this indicates human development in these countries. In India, there will be huge pressure on elementary education; therefore, teachers will be required up to 2040, and then the trend will shift towards higher education.

Health Centers (PHCs)

The health care infrastructure has developed as a three-tier system, i.e., community health centres (CHCs), primary health centres (PHCs) and sub-centre

(SCs) in India. This system is based on the population norms, 120000, 30000 and 5000, respectively. To estimate the future primary health centres' requirements, this study has followed the standard in India. SAARC nations need 57909 PHC in 2015 and will need 82527 PHC in 2050 as per the population. In the upcoming 35 years, these countries will increase 43 per cent of the 2015 requirement (Table 10).

Food and Drinking Water

There is a continuous increase in the number of people and, therefore, a continuous demand for resources also increasing; consequently, there is pressure on our resources. SAARC countries will require a one-third proportion of water by 2015.

Food requirements will also increase in the next three decades. Normally, a person needs an average of 700 grams of food per day, including all the foodstuffs in the range of cereals, pulses, vegetables, fruits, etc. Based on this estimate, SAARC countries will require 39.4 per cent of extra foodstuffs present food requirement. It is recorded that most of the SAARC nations need help to fulfil the current requirements. India will require 120.45 million tons of foodstuffs which is 36 per cent of the current requirement of this country in 2050. Afghanistan and Pakistan are two countries which will require an extra three-fourths of the present food, while Sri Lanka and Bangladesh will be at the bottom in the context of future foodstuff requirements (Table 11). SAARC nations will require 189.26 million tons of extra food by 2050.

Table 10

Elementary School Teacher Requirements (According to T-S Ratio)

Extra requirements of school teachers and primary health centres																
Year	Afghanistan		Bangladesh		Bhutan		India		Maldives		Nepal		Pakistan		Sri Lanka	
	RST	PHC	RST	PHC	RST	PHC	RST	PHC	RST	PHC	RST	PHC	RST	PHC	RST	PHC
2020	7,560	136	-36,653	342	-174	2	135,067	2,910	216	1	-17,529	71	129,022	785	-4,153	15
2025	22,716	267	-18,347	651	-5	1	141,484	5,633	373	2	-7,635	137	327,871	1593	-10,588	23
2030	37,736	395	-9,617	916	176	1	474,455	8,118	266	2	7,032	193	483,356	2386	-16,171	27
2035	37,408	517	-60,040	1138	-103	1	339,764	10,320	-16	3	-3,708	241	530,962	3210	-21,238	27
2040	36,613	632	-112,467	1322	-364	1	134,902	12,290	-173	4	-18,411	286	596,715	4107	-23,598	24
2045	33,078	737	-149,305	1467	-536	1	-41,584	14,102	-160	4	-26,152	330	764,393	5085	-25,613	16
2050	26,695	831	-170,946	1567	-586	1	-84,278	15,713	-72	5	-25,480	368	993,822	6122	-29,414	5

Source: Calculated by the Authors.

Note: (ERST- Extra Requirements of the School teacher, PHC- Primary Health Centre) based on the 2015 population

Table 11

Extra Requirement of Food and Water

year	Afghanistan		Bangladesh		Bhutan		India		Maldives		Nepal		Pakistan		Sri Lanka	
Extra requirements of foodstuff (million tons) and drinking water (million litres)																
	FS	DW	FS	DW	FS	DW	FS	DW	FS	DW	FS	DW	FS	DW	FS	DW
2020	1.04	9.24	2.62	22.41	0.02	0.10	22.31	190.26	0.01	0.07	0.55	4.04	9.39	92.60	0.12	0.95
2025	2.04	18.19	4.98	42.47	0.03	0.19	43.19	366.62	0.02	0.12	1.05	7.76	15.59	153.54	0.19	1.43
2030	3.02	26.90	7.02	59.42	0.04	0.25	62.23	525.28	0.02	0.17	1.49	10.86	21.67	213.29	0.21	1.57
2035	3.96	35.21	8.72	73.02	0.05	0.31	79.11	661.87	0.03	0.21	1.85	13.30	27.98	275.35	0.22	1.46
2040	4.84	42.82	10.13	83.17	0.05	0.35	94.21	774.81	0.03	0.25	2.20	15.23	34.86	342.88	0.19	1.09
2045	5.65	49.52	11.24	89.76	0.06	0.37	108.10	866.75	0.03	0.28	2.53	16.75	42.35	416.42	0.13	0.38
2050	6.36	55.20	12.01	92.74	0.06	0.39	120.45	938.33	0.04	0.30	2.83	17.77	50.30	494.45	0.04	-0.65

Source: Calculated by the Authors.
Notes: FS-Food Stuff (Million Tones), DW- Drinking Water (Million Liters)

1. (i). Water requirement. (3 litres for Men) and (2 litres for Women), (ii). Foodstuff- 700 g /day/ person.
2. Base year for estimation is 2015.

Clothes and Shelter

After water and food, cloth and shelter are the utmost items for human survival. According to the estimation made in this study, an extra 5262.17 million meters of cloth (per year) will be required in the year 2050 for the SAARC nations, which is 43.27 per cent of the current demand of the SAARC nation (Table 12).

Estimation of shelter is based on the two rooms for the five persons. Based on this standard, SAARC countries will require 300.70 million more rooms for the upcoming four decades which is 43.27 per cent more when compared with the 2015 requirement.

Table 12

Extra Requirement of Room and Cloth

Year	Afghanistan		Bangladesh		Bhutan		India		Maldives		Nepal		Pakistan		Sri Lanka	
Extra requirements of room (million) and cloth (million meters)																
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
2020	1.62	28.46	4.10	71.79	0.02	0.36	34.92	611.16	0.02	0.21	0.85	14.87	14.70	257.31	0.18	3.11
2025	3.20	55.99	7.81	136.64	0.04	0.67	67.60	1183.06	0.03	0.39	1.64	28.75	24.40	427.04	0.28	4.89
2030	4.73	82.78	10.99	192.35	0.06	0.93	97.42	1704.83	0.03	0.53	2.32	40.61	33.92	593.56	0.32	5.66
2035	6.20	108.49	13.66	238.96	0.07	1.15	123.85	2167.40	0.04	0.66	2.89	50.65	43.81	766.59	0.32	5.72
2040	7.57	132.60	15.86	277.53	0.08	1.34	147.49	2581.02	0.05	0.79	3.43	60.09	54.57	954.95	0.28	5.02
2045	8.84	154.67	17.59	307.89	0.09	1.50	169.23	2961.44	0.06	0.91	3.96	69.27	66.30	1160.16	0.19	3.41
2050	9.96	174.35	18.81	329.08	0.10	1.63	188.56	3299.85	0.06	1.01	4.42	77.32	78.74	1378.01	0.05	0.93

Source: Calculated by the Authors.
Notes: A- Number of Rooms and B-Cloths

(1) Cloth -7 meters/person per year, Shelter- 2 rooms/ 5 persons.
(2) Base year for calculation/estimation is 2015.

Conclusions

The analysis of population dynamics and demographic transition in SAARC nations during 1950-2050 gives interesting results. It emerged that SAARC nations will experience a significantly faster increase in their working age share between 2015 and 2050. Except for Sri Lanka, other SAARC nations will continuously increase their working population, which has a high cash benefit to increase GDP and reduce the proportion of the BPL population. Asian country working age population and GDP and BPL regression analysis have highly positive ($r=0.68$) and second case, moderately negative ($r=-0.39$). Sri Lanka will achieve the fourth stage of demographic transition in 2045 with zero growth. Bhutan, India, Maldives and Nepal will achieve the late third stage of demographic transition in the year 2050, while Afghanistan and Pakistan will enter the third stage.

In 2050, there will be a positive change in the age structure in Maldives, Bhutan and Sri Lanka, as they will achieve the most developed stage of the age pyramid, while in India, Bangladesh and Nepal age pyramid will be bell-shaped. Conversely, Afghanistan and Pakistan will be in the backward stage with a triangular shape of the age pyramid.

There will be a higher demand for education, food, safe water, proper houses, health and various other basic requirements and amenities, and therefore there will be stress on the resources in these countries.

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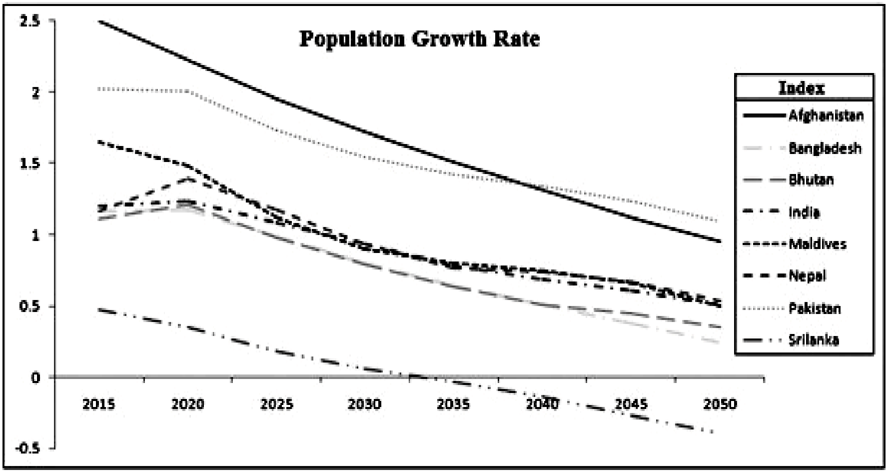
Figure 1

Population Growth Rate (%)

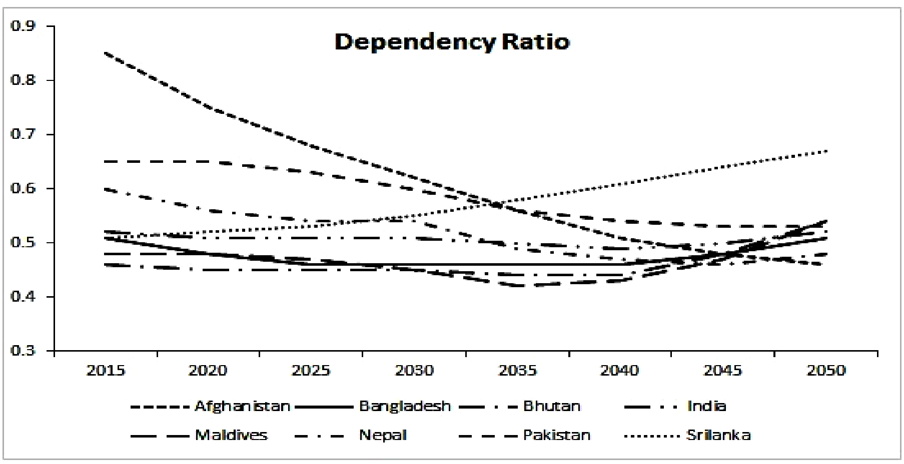


Source: (i) Calculated by the Authors based on country-wise data obtained from different sources as mentioned above sub-title-Projection input and methods.

(ii) Base year has taken 2015 for projection.

Figure 2

Dependency Ratio of SAARC Nation

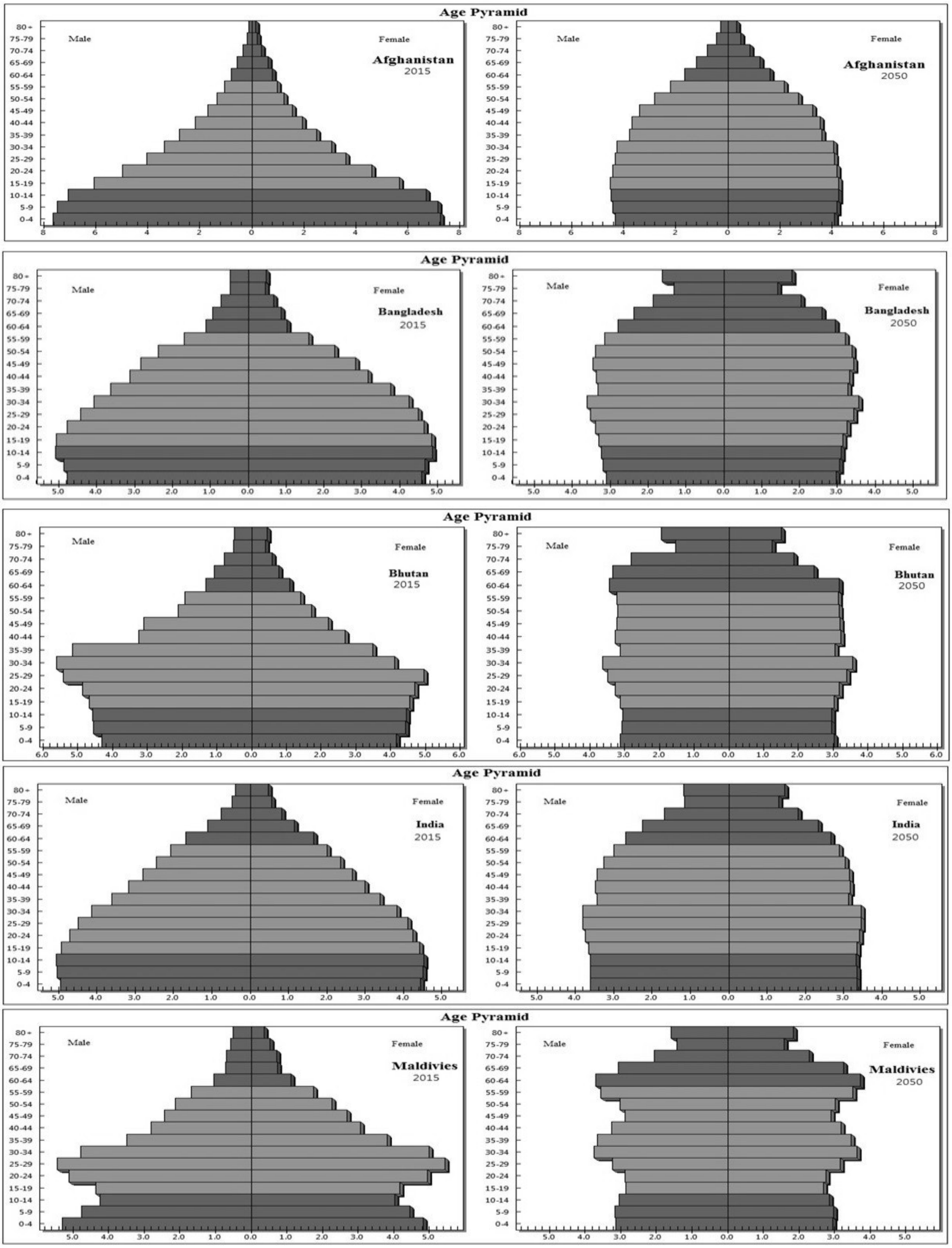


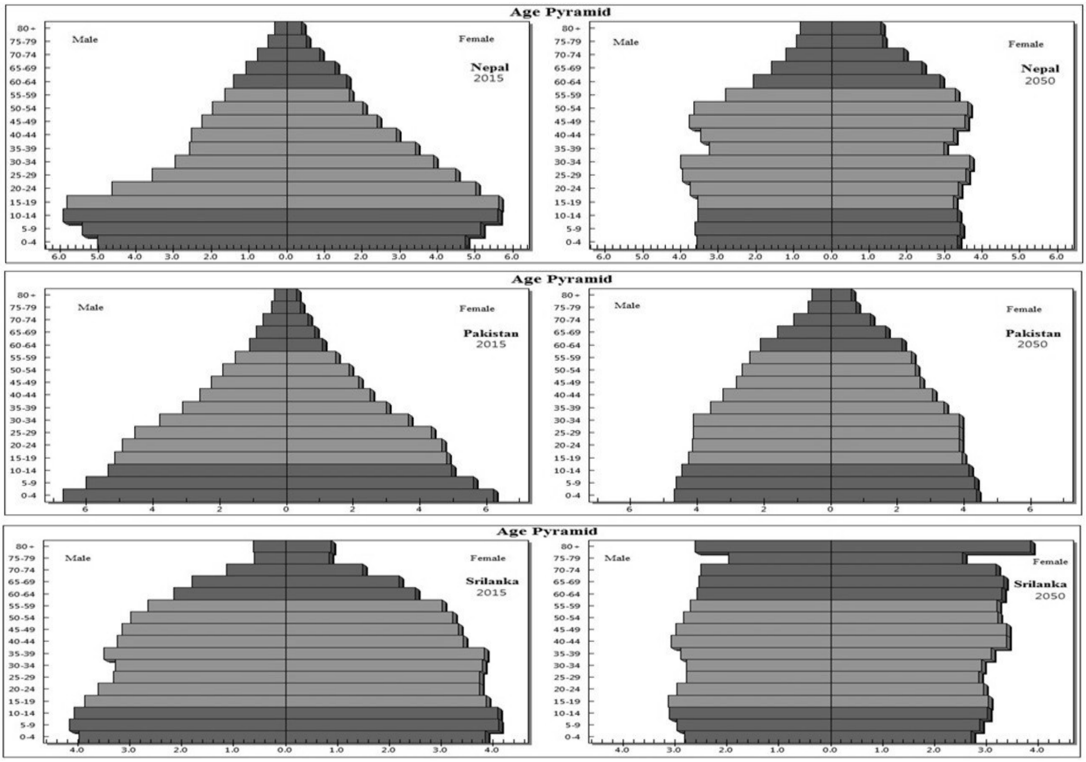
Source: (i) Calculated by the Authors based on country-wise data obtained from different sources as mentioned above sub-title-Projection input and methods.

(ii) Base year has taken 2015 for projection.

Figure 3

Age Structure of SAARC Countries, 2011 and 2050

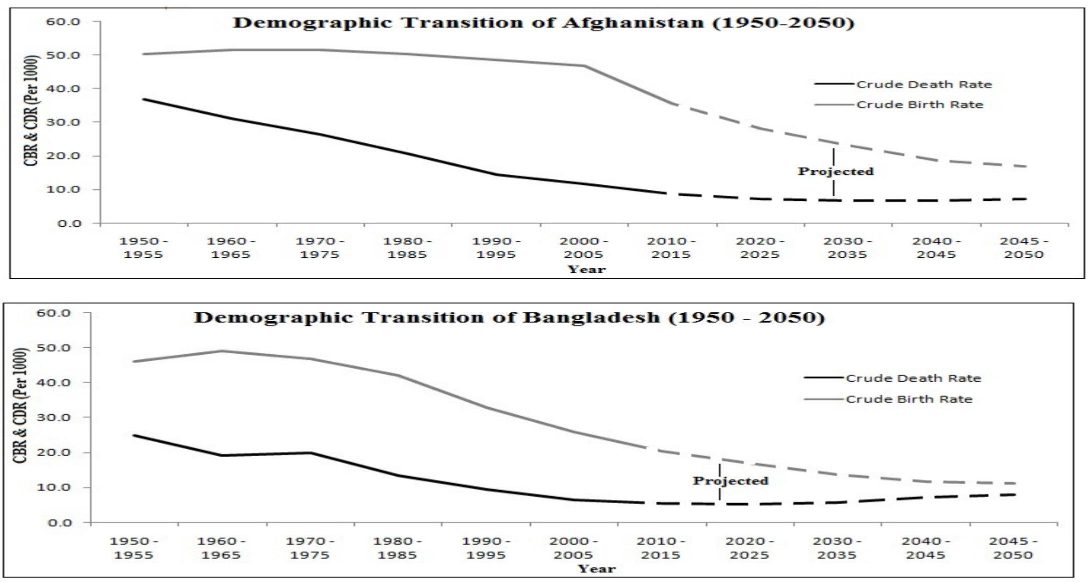


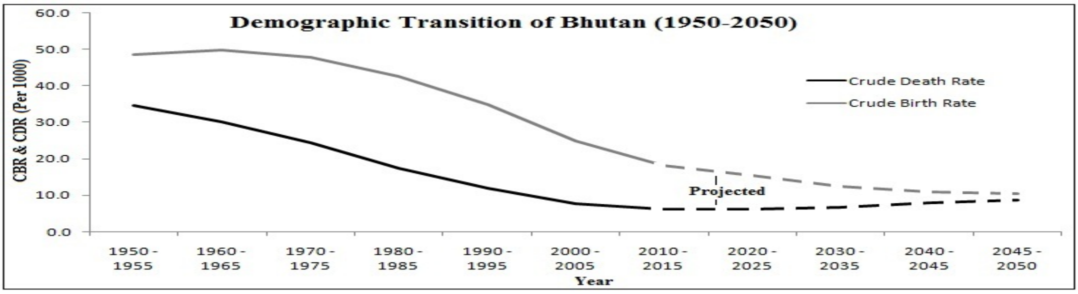


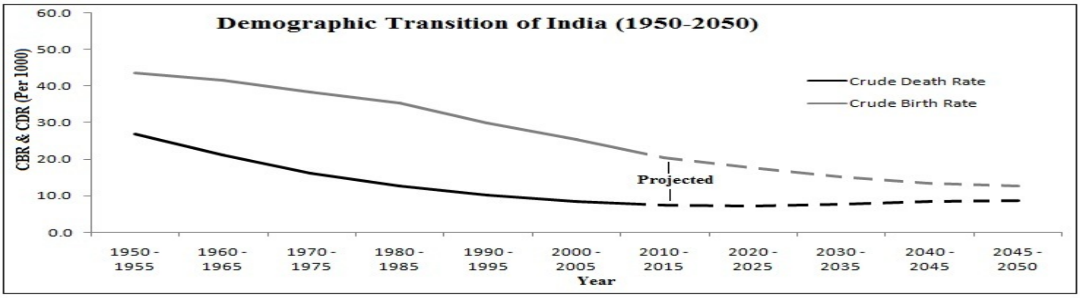
Source: As in Figure 1

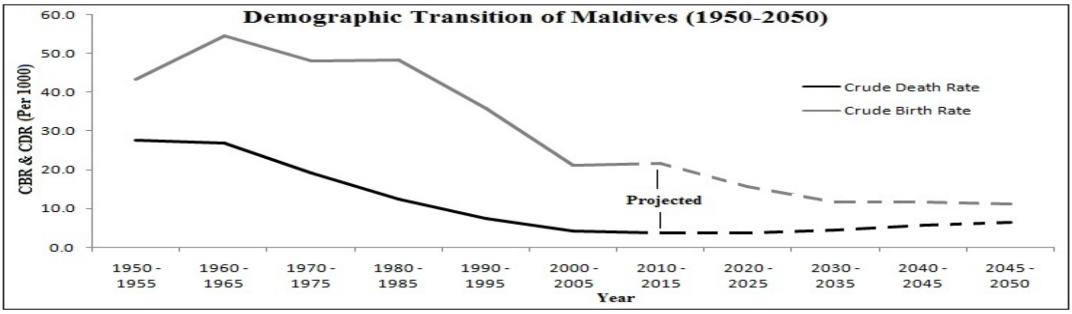
Figure 4

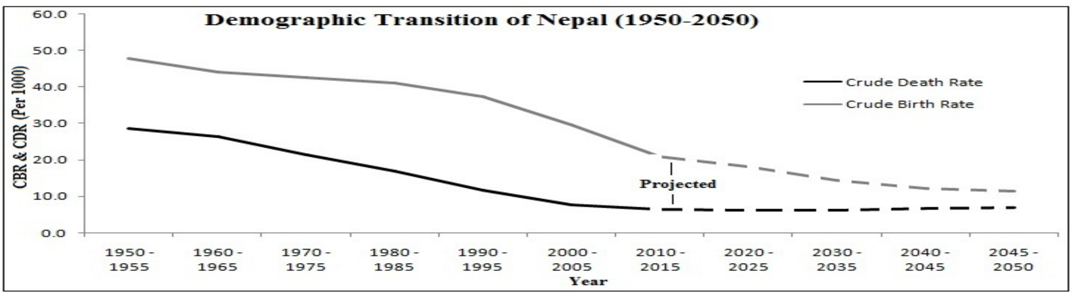
Demographic transitions of SAARC Countries (1950- 2050)

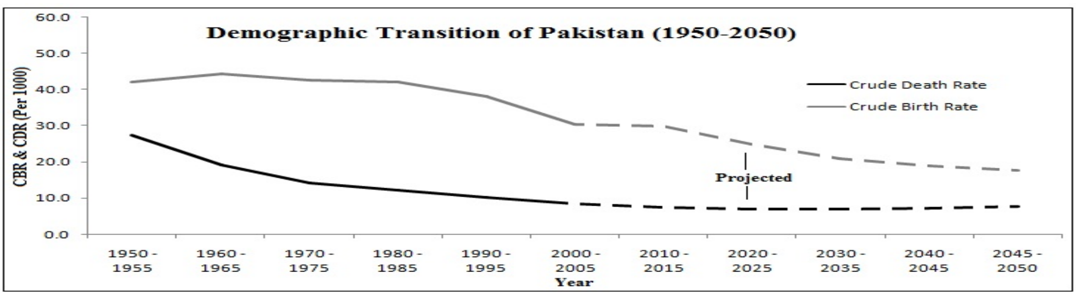


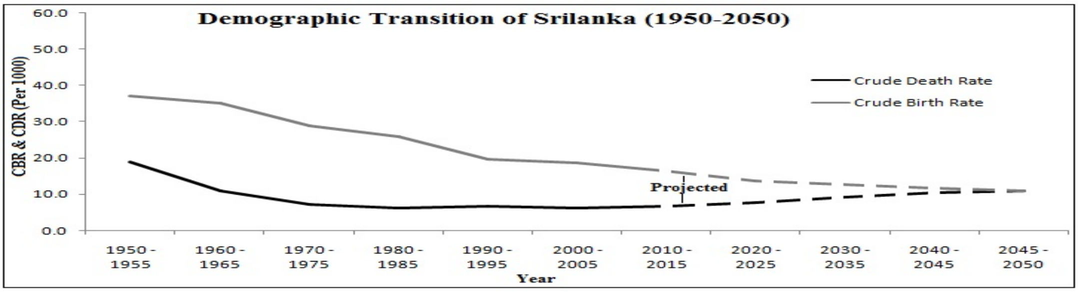

Demographic Transition of Bhutan (1950-2050)
CBR & CDR (Per 1000)
Crude Death Rate
Crude Birth Rate
Projected
Year


Demographic Transition of India (1950-2050)
CBR & CDR (Per 1000)
Crude Death Rate
Crude Birth Rate
Projected
Year


Demographic Transition of Maldives (1950-2050)
CBR & CDR (Per 1000)
Crude Death Rate
Crude Birth Rate
Projected
Year


Demographic Transition of Nepal (1950-2050)
CBR & CDR (Per 1000)
Crude Death Rate
Crude Birth Rate
Projected
Year


Demographic Transition of Pakistan (1950-2050)
CBR & CDR (Per 1000)
Crude Death Rate
Crude Birth Rate
Projected
Year



Source: As in Figure 1

Table 6

Statistical Analysis of Demography of SAARC Countries

Year	Mean Age			Median Age			Modal Age			Standard Deviation			Skewness		
	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F
Afghanistan															
2015	21.71	21.67	21.75	17.39	17.54	17.24	8.77	9.28	8.22	21.71	21.67	21.75	0.60	0.57	0.62
2020	22.78	22.74	22.83	19.15	19.25	19.04	11.87	12.27	11.45	22.78	22.74	22.83	0.48	0.46	0.50
2030	25.34	25.26	25.42	22.83	22.83	22.82	17.81	17.98	17.64	25.34	25.26	25.42	0.30	0.29	0.31
2040	28.20	28.06	28.33	26.37	26.28	26.47	22.72	22.71	22.73	28.20	28.06	28.33	0.19	0.19	0.20
2050	31.30	31.08	31.53	30.01	29.80	30.24	27.44	27.24	27.66	31.30	31.08	31.53	0.12	0.12	0.12
Bangladesh															
2015	28.33	28.26	29.81	25.93	25.65	27.28	21.13	20.42	22.22	28.33	28.26	29.81	0.25	0.28	0.25
2020	29.81	29.68	29.93	27.73	27.39	28.08	23.57	22.79	24.39	29.81	29.68	29.93	0.21	0.23	0.19
2030	33.08	32.83	33.34	32.14	31.65	32.65	30.26	29.31	31.27	33.08	32.83	33.34	0.09	0.11	0.06
2040	36.54	36.16	36.93	36.34	35.70	37.00	35.93	34.77	37.15	36.54	36.16	36.93	0.02	0.04	-0.01
2050	39.74	39.26	40.23	40.93	40.12	41.77	43.29	41.83	44.85	39.74	39.26	40.23	-0.09	-0.07	-0.12
Bhutan															
2015	28.85	29.67	27.91	27.46	28.98	25.88	24.68	27.61	21.84	28.85	29.67	27.91	0.14	0.07	0.22
2020	30.61	31.49	29.60	29.84	31.40	28.23	28.30	31.22	25.51	30.61	31.49	29.59	0.08	0.01	0.14
2030	34.30	35.23	33.24	34.20	35.60	32.76	34.00	36.34	31.79	34.30	35.23	33.24	0.01	-0.03	0.04
2040	38.02	38.92	37.02	38.96	40.17	37.72	40.85	42.65	39.13	38.02	38.92	37.02	-0.07	-0.10	-0.06
2050	41.37	42.17	40.51	43.94	44.91	42.94	49.07	50.37	47.81	41.37	42.17	40.51	-0.19	-0.19	-0.18
India															
2015	29.33	28.87	29.81	26.78	26.32	27.28	21.68	21.21	22.22	29.33	28.87	29.81	0.26	0.27	0.25
2020	30.51	30.03	31.03	28.23	27.73	28.78	23.66	23.13	24.29	30.51	30.03	31.03	0.22	0.23	0.22
2030	32.93	32.40	33.50	31.35	30.80	31.97	28.19	27.60	28.91	32.93	32.40	33.50	0.14	0.15	0.14
2040	35.43	34.87	36.03	34.53	33.95	35.18	32.74	32.11	33.50	35.43	34.87	36.03	0.08	0.08	0.07
2050	37.84	37.25	38.47	37.59	37.00	38.25	37.09	36.49	37.81	37.84	37.25	38.47	0.02	0.02	0.02
Maldives															
2015	28.37	27.99	28.74	26.89	26.22	27.58	23.93	22.68	25.25	28.37	27.99	28.74	0.16	0.19	0.12
2020	29.92	29.42	30.42	29.98	29.14	30.83	30.09	28.59	31.64	29.92	29.42	30.42	-0.01	0.03	-0.04
2030	33.96	33.34	34.58	33.51	32.52	34.53	32.60	30.88	34.44	33.96	33.34	34.58	0.04	0.07	0.00
2040	38.01	37.37	38.65	38.06	37.13	39.04	38.17	36.64	39.83	38.01	37.37	38.65	0.00	0.02	-0.03
2050	41.33	40.75	41.92	46.39	45.46	47.35	56.50	54.86	58.23	41.33	40.75	41.92	-0.37	-0.35	-0.39
Nepal															
2015	27.46	26.78	28.09	23.44	22.14	24.64	15.41	12.86	17.74	27.46	26.78	28.09	0.44	0.52	0.37

2020	28.71	27.80	29.57	25.18	23.81	26.64	18.12	15.82	20.77	28.71	27.80	29.57	0.37	0.43	0.30
2030	31.58	30.30	32.79	30.14	28.41	32.06	27.27	24.62	30.61	31.58	30.30	32.79	0.14	0.19	0.07
2040	35.01	33.49	36.46	34.74	32.78	36.93	34.20	31.35	37.86	35.01	33.49	36.46	0.02	0.06	-0.04
2050	38.53	36.88	40.12	40.06	37.83	42.56	43.12	39.74	47.45	38.53	36.88	40.12	-0.12	-0.08	-0.18
Pakistan															
2015	25.11	24.99	25.25	21.68	21.49	21.88	14.80	14.48	15.14	25.11	24.99	25.25	0.41	0.42	0.40
2020	25.59	25.43	25.76	22.42	22.19	22.65	16.07	15.73	16.44	25.59	25.43	25.76	0.37	0.38	0.36
2030	27.04	26.83	27.26	23.93	23.71	24.17	17.70	17.46	17.98	27.04	26.83	27.26	0.35	0.35	0.34
2040	28.51	28.27	28.75	25.31	25.12	25.53	18.93	18.81	19.08	28.51	28.27	28.75	0.34	0.33	0.34
2050	29.43	29.18	29.69	26.64	26.44	26.85	21.05	20.95	21.17	29.43	29.18	29.69	0.28	0.28	0.29
Sri Lanka															
2015	33.71	32.90	34.47	32.23	31.04	33.39	29.28	27.32	31.22	33.71	32.90	34.47	0.13	0.17	0.09
2020	35.22	34.27	36.10	33.46	31.95	34.95	29.93	27.31	32.63	35.22	34.27	36.10	0.15	0.20	0.10
2030	38.17	36.94	39.28	35.71	33.87	37.52	30.79	27.74	34.00	38.17	36.94	39.28	0.19	0.25	0.13
2040	40.46	39.00	41.78	40.00	37.50	42.51	39.06	34.52	43.97	40.46	39.00	41.78	0.03	0.11	-0.05
2050	42.51	40.87	43.98	42.79	39.99	45.62	43.36	38.23	48.90	42.51	40.87	43.98	-0.02	0.06	-0.11

Source: Calculated by the Authors.

Note: T-Total, M-Male, F-Female