Strategies for Achieving the Sustainable Development Goals (SDGs) in South Asia: Lessons from Policy Simulations

Nagesh Kumar, Matthew Hammill, Selim Raihan and Swayamsiddha Panda

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Foreword

The Development Papers Series of the ESCAP South and South-West Asia Office (ESCAP-SSWA) promotes and disseminates policy-relevant research on the development challenges facing South and South-West Asia. It features policy research conducted at ESCAP-SSWA as well as by outside experts from within the region and beyond. The objective is to foster an informed debate on development policy challenges facing the subregion and to share development experiences and best practices.

This paper was prepared as a background document for the forthcoming UNESCAP Report titled *Achieving the Sustainable Development Goals in South Asia: Key Policy Priorities and Implementation Challenges*. It examines the areas of progress and major challenges for sustainable development in South Asia. The paper identifies seven key strategic policy priorities for the achievement of the Sustainable Development Goals (SDGs) in South Asia by analyzing interrelationships between the SDGs and positive spillovers between the three dimensions of development. The paper further undertakes policy simulations within a computable general equilibrium framework to examine the macroeconomic policy implications of select development priorities on key dimensions, including economic growth, poverty reduction and employment. It brings forward a possible policy agenda for pursuing inclusive and sustainable transformation of South Asia for the achievement of the SDGs. Given South Asia's weight in the world population and poverty, the subregion will occupy a pivotal place in the global achievement of the SDGs.

The SDGs offer a unique transformative opportunity to close development gaps and provide a life of dignity and sustainable prosperity to nearly a quarter of the global population that lives in South Asia. We hope that insights and policy lessons drawn in this paper will be useful for designing a strategy to implement the 2030 Agenda for Sustainable Development in South Asia. Implementing this policy agenda could assist South Asia in realizing its potential as a powerful engine of the world economy.

Nagesh Kumar

Head, ESCAP South and South-West Asia Office

Strategies for Achieving Sustainable Development Goals (SDGs) in South Asia:
Lessons from policy simulations

Nagesh Kumar, Matthew Hammill, Selim Raihan and Swayamsiddha Panda[*]

Abstract

This paper analyzes the major challenges to achieving sustainable development in South Asia as a basis for articulating development strategies for the achievement of the Sustainable Development Goals (SDGs) in the subregion. It identifies key combinations of dimensions of the 2030 Agenda and SDGs that could form core development priorities and maximize interactions for the achievement of the SDGs. The paper further analyzes the policy impacts from select development priorities within a computable general equilibrium framework on economic growth, poverty reduction and employment, among other parameters of development. The results suggest that an industry-oriented structural transformation, enhancing agricultural productivity through sustainable agriculture and overall efficiency improvements through innovations have the potential to lift an additional 71 million people out of poverty, create 56 million additional jobs in South Asia and boost GDP by 15-30 per cent by 2030 over and above the business-as-usual scenario.

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[*] Nagesh Kumar, Matthew Hammill and Swayamsiddha Panda are staff members of the South and South-West Asia Office of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP SSWA).Selim Raihan is Professor of Economics at the University of Dhaka and Executive Director of the South Asian Network on Economic Modeling (SANEM). The views presented in the paper are those of the authors and should not be attributed to the United Nations or its Member States.

1. Introduction

The 17 Sustainable Development Goals (SDGs) enshrined in the 2030 Agenda for Sustainable Development adopted at the United Nations by the 193 Member States represent a new global development compact. Encompassing three core dimensions of economic, social and environmental development, the Agenda has become the centre of a renewed development framework for countries of the world, including South Asia, to meet the changing development priorities and development gaps that previous strategies have been unable to close.[1] South Asia has achieved a number of Millennium Development Goals (MDGs) including the poverty-reduction goal. But the progress has been uneven across goals, and across and within countries.[2] Despite these achievements, South Asia represents the largest concentration of poverty and hunger in the world. Hence, the SDGs provide to the region a transformative opportunity for a life of dignity and sustainable prosperity to all. Given South Asia's weight in global population and poverty, the subregion occupies a critical place in the achievement of the SDGs. Global MDGs achievement was driven by China. South Asia will be the key region that will determine the global achievement of the SDGs.

Against that backdrop, the paper analyzes the key challenges to achieving sustainable development in South Asia to guide the countries' formulation and implementation of development strategies towards SDG achievement. It examines the mutually reinforcing nature of key SDG strategies through an exploratory attempt at policy simulations to assess the policy impacts of two selected development priorities -- within a computable general equilibrium framework -- and draws policy lessons.

The paper is structured as follows: Section 2 describes the SDGs. Section 3 analyzes the challenges for South Asia's sustainable development by linking key development trends to particular SDGs. This is undertaken based on combinations that correspond with prominent perspectives on development in the subregion to identify select SDG policy strategies that link SDGs and can be applied across South Asia countries taking into account their national contexts. Section 4 describes the empirical analysis and results of applying selected priorities in South Asia within a computable general equilibrium framework to assess their policy impacts in terms of growth, structural transformation and poverty. Section 5 concludes.

2. South Asian Countries and the SDGs

The South Asia countries are quite distinct in population, economic structure and development challenges although they are all developing countries. Five of those countries have special needs, including Maldives as a Small Island Developing State (SIDS), Bangladesh, as a

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[1] General Assembly resolution 70/1.
[2] See UNESCAP, ADB and UNDP (2015) for a detailed assessment.

least developed country and Afghanistan, Bhutan and Nepal being also landlocked least developed countries. Considering just three common relevant dimensions used to rank countries, that is, population size, GDP and GDP per capita, South Asia can be grouped into various clusters of countries (see figure 1).

Figure 1: Size of the South Asian Economies and Income Levels
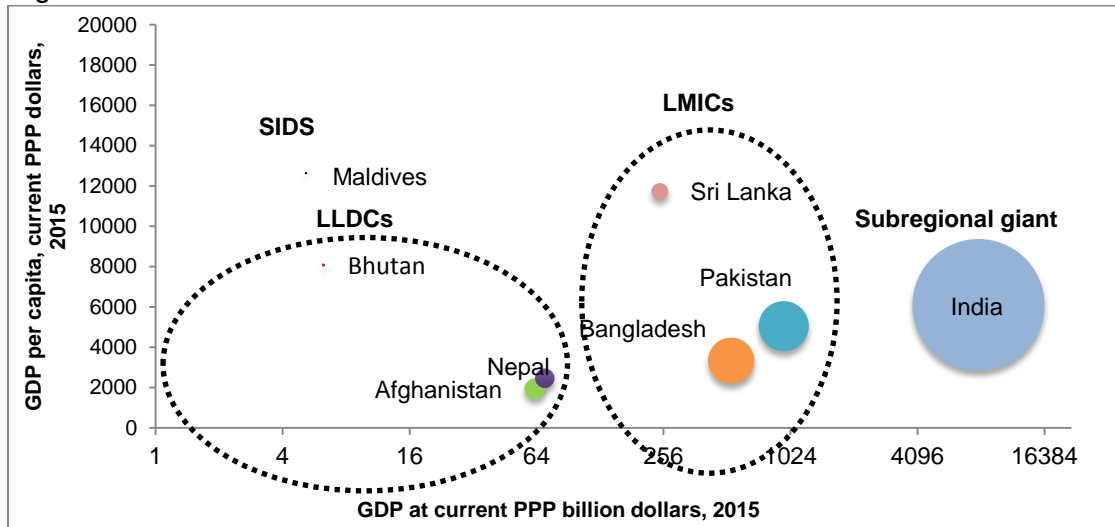
Source: UNESCAP based on World Development Indicators, World Bank (accessed on 17 July 2016).
Notes: LLDCs = Landlocked Developing Countries, LMICs = Lower-middle income countries, SIDS= Small Island Developing States.

By GNI per capita classifications, South Asia is a collection of low-income and lower-middle income countries, except for Maldives. Average per capita incomes using most recent values are $1533 for South Asia in 2015, varying between $6670 for the Maldives to only $630 for Afghanistan.[3]

Overall, South Asian countries face fundamental sustainable development challenges in basic needs and service delivery. The SDGs build upon and extend the MDG agenda. The goals provide to South Asia a timely opportunity to make its development process more inclusive and sustainable and to close the development gaps.

The structure of the SDGs

The 2030 Agenda represents a culmination of an unprecedented extensive process of consultations at national, subregional, regional and global levels involving governments, business and industry, civil society among other stake holders including in an Open Working

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[3] Using GNI per capita and the World Bank income classification methodology. See
https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries.

Group of the General Assembly and expert panels, conducted over the past three years following the Rio+20 conference on sustainable development.[4] Within the Economic and Social Council, a High-level Political Forum was created.[5] At the regional level, ESCAP established Asia-Pacific Forums on Sustainable Development in 2014 and 2015.[6] The 2030 Agenda is complemented by the other significant high-level intergovernmental meetings. One was the third International Conference on Financing for Development held in Addis Ababa in July 2015 resulting in the Addis Ababa Action Agenda (AAAA) that identified a shared vision of pathways to secure the resources to fulfill the sustainable development goals and accelerate development in developing countries.[7] A second significant global accord within the SDG context was the Paris Agreement on Climate Change that was the result of the Conference of Parties (COP) 21 for the United Nations Framework Convention on Climate Change.[8]

The 2030 Agenda for Sustainable Development comprising the 17 SDGs and 169 targets encompassing three core dimensions of economic, social and environmental development was adopted by the world leaders on 25 September 2015. [9] The list of 17 SDGs and 169 targets included in the 2030 Agenda actually covers four broad sets of issues that seek not only to carry forward the unfinished MDG agenda but also to factor in the important lessons learned from the experiences in implementing the MDGs (see figure 2).

Achieving the first seven SDGs (SDGs 1-7) requires completing the task of providing basic human development needs and services that began with the MDGs. The subregion today represents the largest concentration of poverty, hunger and other deprivations in the world. Unlike the MDGs that targeted reduction in deprivations, the SDGs seek to leave 'no one behind' and provide a life of dignity to all.

The 2030 Agenda incorporates the common drivers and cross-cutting issues that are essential to advance sustainable development across all of the dimensions (SDGs 8-10). South Asia's investment in growth, infrastructure, inclusion and urbanization will act as the engine that drives sustainable development. The subregion faces significant gaps in these areas, but there is currently an enormous momentum and political will for leveraging strategies to generate concrete actions.

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[4] See General Assembly resolution 66/288; United Nations (2013); United Nations Development Group (2013); United Nations Resident Coordinator's Office (2013); UNESCAP and Thailand, Ministry of Foreign Affairs (2013); A/68/970; and General Assembly resolution 69/313. For the Nagarkot Statement, see UNESCAP and others (2014).
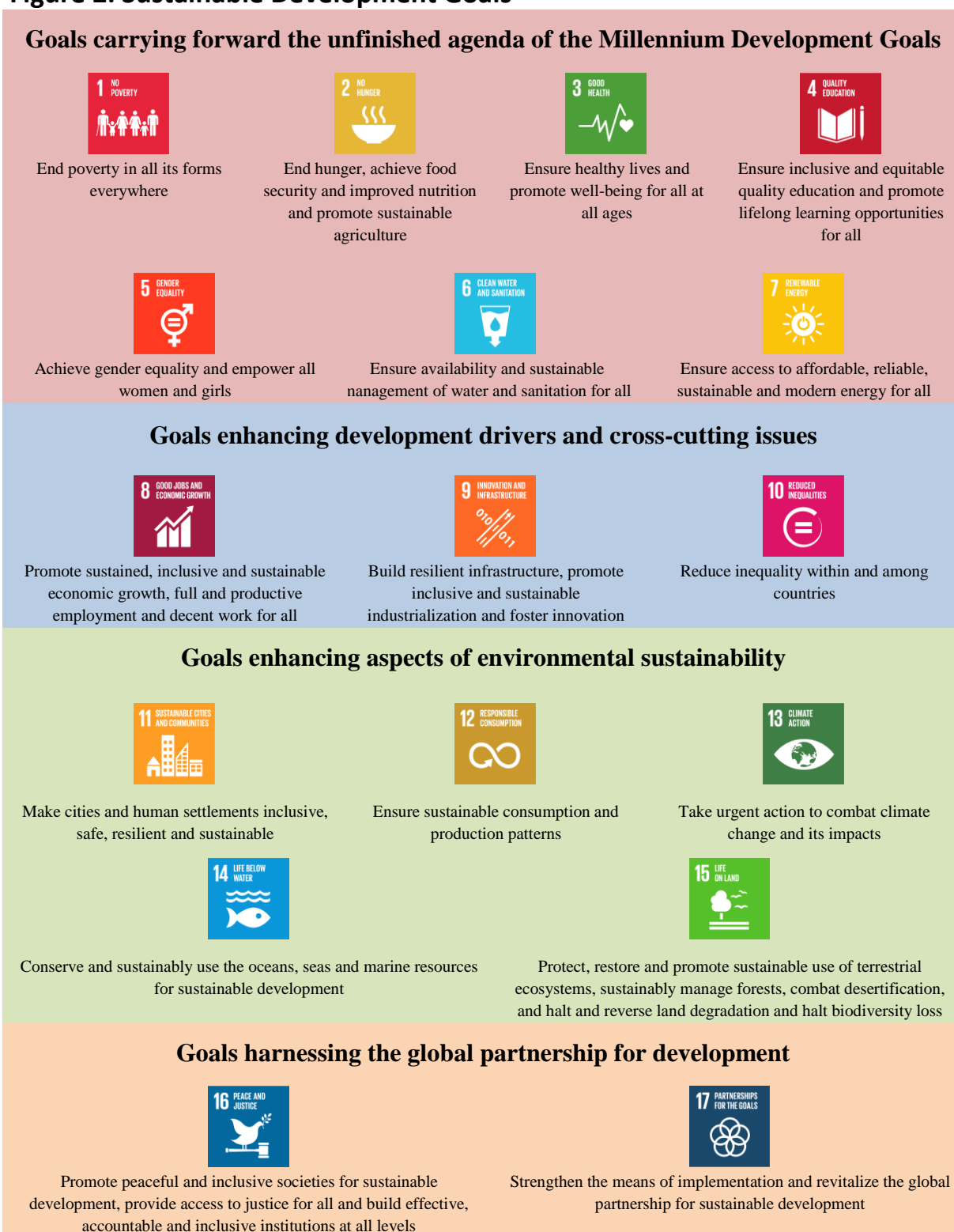[5] General Assembly resolution 67/290.
[6] UNESCAP (2015b).
[7] General Assembly resolution 69/313, annex.
[8] See http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf.
[9] See General Assembly resolution 70/1.

Figure 2: Sustainable Development Goals

Goals carrying forward the unfinished agenda of the Millennium Development Goals

1 NO POVERTY
End poverty in all its forms everywhere

2 NO HUNGER
End hunger, achieve food security and improved nutrition and promote sustainable agriculture

3 GOOD HEALTH
Ensure healthy lives and promote well-being for all at all ages

4 QUALITY EDUCATION
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

5 GENDER EQUALITY
Achieve gender equality and empower all women and girls

6 CLEAN WATER AND SANITATION
Ensure availability and sustainable nanagement of water and sanitation for all

7 RENEWABLE ENERGY
Ensure access to affordable, reliable, sustainable and modern energy for all

Goals enhancing development drivers and cross-cutting issues

8 GOOD JOBS AND ECONOMIC GROWTH
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

9 INNOVATION AND INFRASTRUCTURE
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

10 REDUCED INEQUALITIES
Reduce inequality within and among countries

Goals enhancing aspects of environmental sustainability

11 SUSTAINABLE CITIES AND COMMUNITIES
Make cities and human settlements inclusive, safe, resilient and sustainable

12 RESPONSIBLE CONSUMPTION
Ensure sustainable consumption and production patterns

13 CLIMATE ACTION
Take urgent action to combat climate change and its impacts

14 LIFE BELOW WATER
Conserve and sustainably use the oceans, seas and marine resources for sustainable development

15 LIFE ON LAND
Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goals harnessing the global partnership for development

16 PEACE AND JUSTICE
Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

17 PARTNERSHIPS FOR THE GOALS
Strengthen the means of implementation and revitalize the global partnership for sustainable development

Source: Authors' construction based on General Assembly resolution 70/1
Notes: For icons, see www.globalgoals.org.

Promoting peaceful and inclusive societies and providing adequate means of implementation for sustainable development in South Asia is critical for long-term sustainability and intergenerational equity (SDGs 16-17). Investing in solid policies, institutions, coordination and monitoring will lock-in gains and increase resilience in the face of shocks and create a stimulating environment for cooperation and support in providing the means of implementation to achieve the SDGs and transform the subregion in a generation.

3. Key issues for achieving the SDGs in the South Asia context

This section considers a series of first-round interlinkages between particular challenges and opportunities for South Asia in terms of the SDGs. Interlinked goals are described in order of the first relevant goal for groups of goals identified in the previous section. By assessing key development factors within each group for the South Asian context, common cross-group strategic priorities can be identified.

a. *Eliminating extreme poverty and reducing inequalities*

The performance of South Asia in terms of the MDG goal of poverty reduction has been driven by the bursts of acceleration in poverty reduction that took place immediately before the global financial crisis and in recent years. As a whole, the subregion has reduced extreme poverty by 54.7% since 1990, while the MDG reduction target was 50% (see table 1). South Asia therefore needs to improve in sharing the fruits of its growth. The UNESCAP index of inclusiveness found growth in countries in South Asia to be less socially inclusive than in other countries in Asia and the Pacific.[10] Table 1 shows that inequalities (as measured by the Gini coefficient) rose in Bangladesh, India and Sri Lanka. Consumption-based measures, used in most of South Asia tend to be less effective at identifying inequality than income measures[11] and the mixed results for the Gini coefficient mask the stark inequality levels that remain across the subregion.[12] Other inequality indicators reinforce the trend of uneven and unequal growth in South Asia. In India, the net worth of the billionaire community has multiplied 12-fold in the last

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[10] See UNESCAP (2015a).

[11] UNESCAP analysis previously considered the potential for simple inequality measures, such as the Gini coefficient, to mask significant income inequality across countries in the subregion. In the case of India the consumption-based Gini coefficient was 0.39, while inequality based on income in the same survey showed the value for the Gini coefficient at 0.52, which is similar to the levels of Brazil and higher than inequality in China at around the same period. See UNESCAP SSWA (2012), box 2.5.

[12] The Gini measure itself tends to favour the middle of the income distribution rather than the tails, and is subject to variation. Alternative measures, including the Theil coefficient, have been considered as more appropriate to place greater emphasis on the segment of the distribution living in poverty. Recent work (Sustainable Development Solutions Network, 2015) suggests that inequality measures such as the Palma ratio, defined as the ratio of the richest 10% of the population's share of gross national income divided by the poorest 40% of the population's share, seek to overcome some of the limitations of the Gini coefficient.

15 years.[13] The International Monetary Fund (IMF) estimates that the wealth earned by billionaires in India is twice the amount required to eliminate extreme poverty in the country.[14] Recent research also suggests that rural and urban inequality has increased as a result of financial development, economic growth and consumer price dynamics of which urban populations are better able to take advantage and from which they are better able to benefit.[15]

Table 1: Change in poverty, inequality and growth in South Asia, 1990-2015
(percentage change over specified period)

	Period*	$1.25 per day (2005 PPP)	$2 per day (2005 PPP)	Gini coefficient	Same period change in GNI per capita, PPP (constant 2011 international $)	Same period change in GDP per capita, PPP (constant 2011 international $)
Bangladesh	1991-2010	-38.4	-17.7	16.4	102.0	91.0
Bhutan	2003-2012	-90.1	-67.7	-17.3	61.5	68.8
India	1993-2011	-52.2	-27.5	9.0	157.1	155.8
Nepal	1995-2010	-65.1	-37.1	-6.8	..	42.3
Pakistan	1990-2010	-80.3	-42.5	-10.8	41.6	42.5
Sri Lanka	1990-2009	-72.6	-51.8	12.1	111.0	112.0
South Asia	1990-2011	-54.7	-28.1		141.6	141.0

Source: Authors' calculations, based on World Bank, World Development Indicators.
Notes: * Year matches nearest or most recent value with available data. Totals for South Asia are according to the World Bank grouping. GNI = gross national income.

The pro-poor growth record of the subregion is mixed. As shown in Table 1, since 1990, GDP per capita increased on average across South Asia by nearly 1.5 times (141%) but poverty fell by only half. Recent estimates show that the poverty elasticity of growth in South Asia for 1990-2005 was low for Bangladesh, India and Sri Lanka, at nearly zero, 0.35 and 0.67, respectively. Greater poverty reducing impacts for each percentage of growth were registered for Bhutan and Nepal, with poverty reductions of 0.91% and 1.19% for each percentage of growth in GDP per capita.[16] Rising inequality inhibits poverty reducing economic growth. However, economic growth is a necessary but not sufficient condition for poverty reduction. There is now

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[13] See www.thehindubusinessline.com/news/international/income-inequality-increasing-globally-lagarde/article5652409.ece, http://timesofindia.indiatimes.com/business/india-business/Income-inequality-on-the-rise-in-countries-like-India-IMF/articleshow/29857803.cms and http://indianexpress.com/article/business/business-others/imf-income-inequality-on-the-rise-in-countries-like-india/.
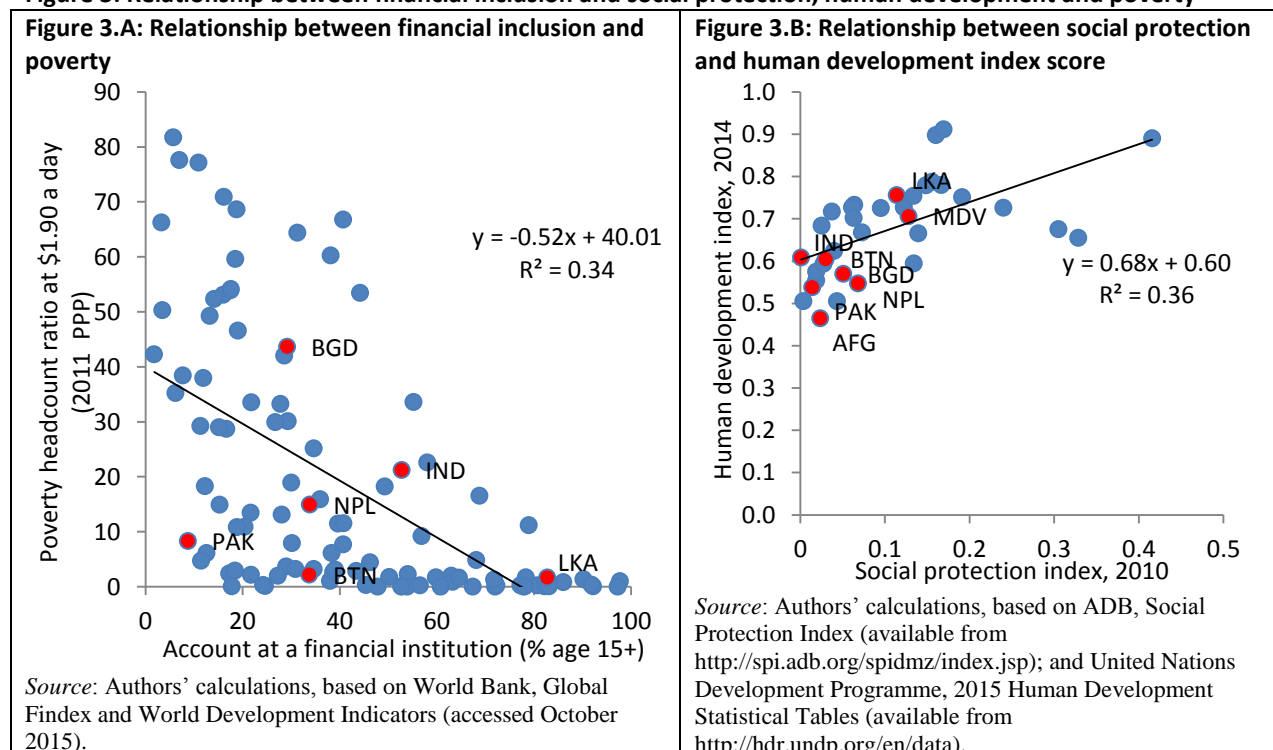[14] Lagarde (2014).
[15] Tiwari, Shahbaz and Islam (2013).
[16] Ram (2015).

an emerging consensus that social protection strategies and financial inclusion are important for accelerating poverty reduction and human development by increasing the resilience of populations vulnerable to poverty, especially to adverse income shocks.[17] Figure 3A corroborates the inverse relationship between financial institution account ownership and poverty headcount ratio. Figure 3B shows the positive relationship between social protection index and human development index across countries. Therefore, enhancing social protection strategies and financial inclusion will be two important strategies for reduction in poverty and inequalities. Social protection has been included in SDG-1.3 as an independent target by itself besides decent work, the provision of basic services for all that are part of social protection.

Figure 3: Relationship between financial inclusion and social protection, human development and poverty

Figure 3.A: Relationship between financial inclusion and poverty

$y = -0.52x + 40.01$
$R^2 = 0.34$

Source: Authors' calculations, based on World Bank, Global Findex and World Development Indicators (accessed October 2015).

Figure 3.B: Relationship between social protection and human development index score

$y = 0.68x + 0.60$
$R^2 = 0.36$

Source: Authors' calculations, based on ADB, Social Protection Index (available from http://spi.adb.org/spidmz/index.jsp); and United Nations Development Programme, 2015 Human Development Statistical Tables (available from http://hdr.undp.org/en/data).

In South Asia, given that the vast majority of the workforce is engaged in informal employment, enhancing the coverage of social protection would be very critical and should be seen as a smart investment in sustainable development. Applying evidence-based policy to the design of such programmes ensures they reach target groups and crowd-in other economic, social and environmental benefits. Applications of evidence-based policy, including the increasingly common use of randomized controlled trials (RCTs) in the evaluation of delivery of anti-poverty programmes, such as those carried out by the Abdul Latif Jameel Poverty Action Lab (J-PAL),

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[17] Park and Mercado (2015).

have also generated a rich collection of information on good practices and lessons learned to refine programme delivery as it is replicated and scaled up.[18] For example, one RCT in Pakistan adapted from a Bangladeshi model, assessed an intervention package to village households living in most extreme poverty by providing a productive asset, business training and cash transfers. The programme had positive lasting impacts in household incomes, self-employment and political involvement. The high up-front cost per person was offset by the 179% return on this investment by the end of the programme.[19]

b.   *Eradicating hunger and achieving food security*

South Asia continues to be one of the largest hunger hotspots in the world, with one in five people in the subregion being undernourished. A sustainable solution to address food insecurity and hunger in South Asia requires a focus on agricultural productivity to enhance availability of food as well as to accelerate poverty reduction and improve food distributional aspects. It also requires focusing on nutritional aspects to address the high levels of anemia and vitamin A deficiency that exist in the subregion. Given the fact that agriculture supports nearly half of the populations in South Asia, any improvement in agricultural productivity would also lead to poverty reduction. In this context a new green revolution based on sustainable agriculture seeking to double agricultural productivity, as targeted by SDGs, would have wide-ranging effects, not only for hunger but also for poverty reduction, job creation and inequality reduction.

c.   *Quality access to education and health for all*

South Asia has been successful in meeting its MDG targets on universal primary enrolment and primary completion. However, at 59%, the subregion's net secondary enrolment rate lags behind the global average of 65% by 6 percentage points.[20] Girls, especially in Pakistan and Afghanistan, and children from lower socio-economic strata and lagging regions continue to have lower access to primary education. South Asia hasn't experienced commensurate improvements in learning levels, and the quality of education provided especially in rural areas is often poor. Student achievement levels have been low in most countries in South Asia. The outcomes are partly explained by low public expenditure on education as a percentage of GDP, ranging in most countries in the subregion from 2.0% in Bangladesh, 3.8% in India, 2.5% in Pakistan and 1.6% in Sri Lanka, well below the recommended threshold of 6%.[21]

Similarly, South Asia has made notable progress in achieving the health-related MDGs by reducing maternal mortality, registering a 67% decrease in the maternal mortality ratio
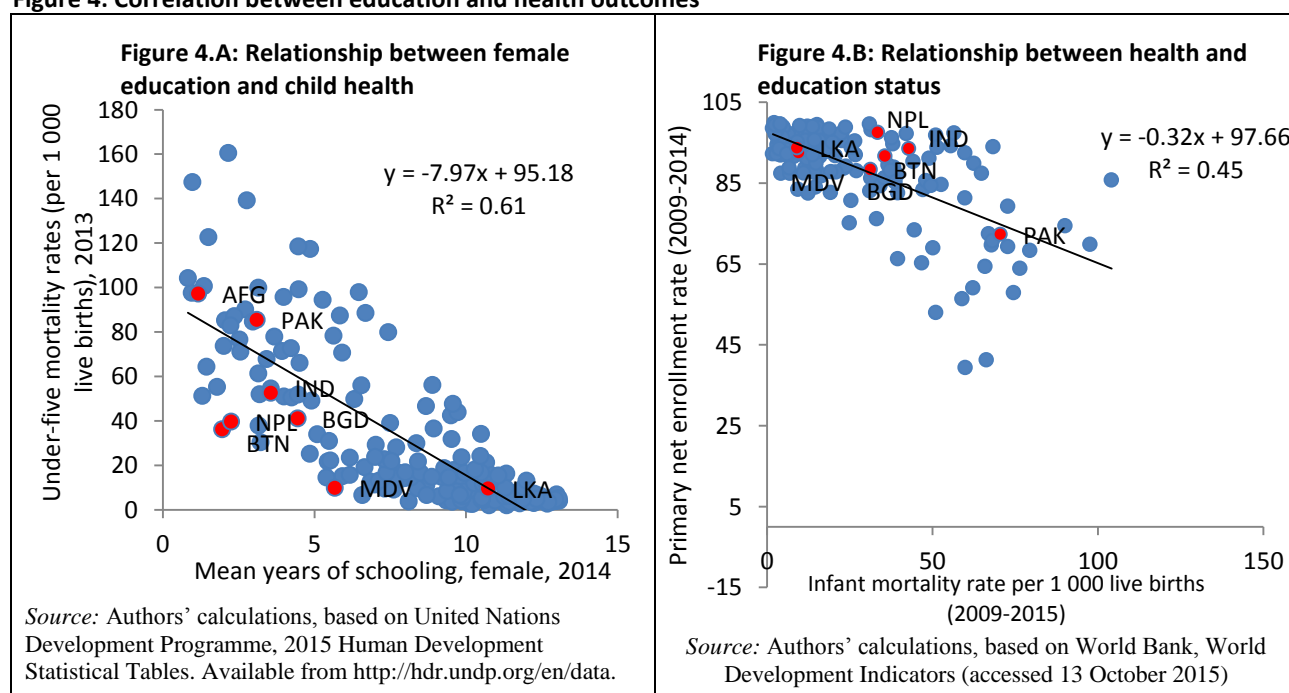
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[18] For more details, see https://www.povertyactionlab.org/.

[19] http://www.poverty-action.org/study/graduating-ultra-poor-pakistan.

[20] See data from the UNESCO Institute for Statistics(UIS). Available from http://data.uis.unesco.org/ (accessed August 2016).

[21] See the Oslo Declaration. Available from www.unesco.org/education/Oslo_Declaration_final_17dec08.pdf.

between 1990 and 2015; however, this figure is still below the MDG target of a 75% reduction. Just over half (52%) of birth deliveries were attended by skilled health personnel in South Asia in 2014, while East Asia has attained universal skilled birth attendance. South Asia also continues to have both a high rate of under-five mortality, at 53 deaths per 1,000 live births in 2015. Public health expenditure levels in South Asia remain very low, at 1.4% of GDP in 2014, compared with the world average of 6% and about 8% in the high-income Organization for Economic Cooperation and Development (OECD) countries. Public expenditure on health in India (1.4% of GDP in 2014) is less than half of that in China (3.1% of GDP in 2014).[22]

There is also a strong correlation between health and education, especially between female education and the health of children (see figure 4).

Figure 4: Correlation between education and health outcomes

Figure 4.A: Relationship between female education and child health

y = -7.97x + 95.18
R² = 0.61

Source: Authors' calculations, based on United Nations Development Programme, 2015 Human Development Statistical Tables. Available from http://hdr.undp.org/en/data.

Figure 4.B: Relationship between health and education status

y = -0.32x + 97.66
R² = 0.45

Source: Authors' calculations, based on World Bank, World Development Indicators (accessed 13 October 2015)

For South Asia, universal access to education and health would be achieved through SDG policy strategies aiming for the universalization of quality primary and secondary education and for the provision of equal opportunities to access higher education and training for all.

d.   *Gender equality and women's empowerment*

Although South Asia has done well in terms of gender equality related MDG targets, having achieved gender parity in primary education and having made substantial gains for girls'

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[22] See World Bank, World Development Indicators. Available from
http://databank.worldbank.org/data/reports.aspx?source=2&country=&series=SH.XPD.PUBL.ZS&period=#.

enrolment in secondary education,[23] the subregion continues to underperform across a range of gender equality indicators. Table 2 shows the very poor ranks of South Asian countries in terms of three global indices measuring gender equality. The first of these is the Global Gender Gap produced by the World Economic Forum,[24] the second measuring Gender Development Index and the third Gender Inequality both produced as part of the Human Development Reports published by the United Nations Development Programme (UNDP). Generally, Afghanistan and Pakistan find themselves at the bottom of these indices, while Sri Lanka has generally the best rankings among the South Asian countries overall.

Table 2: South Asian countries' rankings and scores on gender-related indices

| South Asia	Global Gender Gap (2014) [i] (on 142 countries)		Gender Development Index (GDI) (2013)[ii] (on 187 countries)		Gender Inequality Index (GII) (2013)[iii] (on 187 countries)	
	Rank	**Score**	**Rank**	**Score**	**Rank**	**Score**
Afghanistan	n.a.	n.a.	148	0.330	149	0.705
Bangladesh	68	0.697	107	0.528	115	0.529
Bhutan	120	0.636	n.a.	n.a.	102	0.495
India	114	0.645	132	0.519	127	0.563
Maldives	105	0.656	90	0.673	49	0.283
Nepal	112	0.646	102	0.514	98	0.479
Pakistan	141	0.552	145	0.447	127	0.563
Sri Lanka	79	0.690	66	0.720	75	0.383

Sources: i. World Economic Forum (2014*).* ii. UNDP (2014),Table 5. iii. UNDP (2014), Table 4.

The Global Gender Gap Report also provides gender inequality score on countries' performance against four sub-indices, namely education, health, political empowerment and economic participation (see figure 5). The figure shows that the variation across countries in terms of gender inequality in health has come down, there is considerable variation in terms the other three dimensions, with inequality in political empowerment being widest. In terms of educational attainment, for instance, Sri Lanka and Maldives have the least gender inequality, Pakistan has the highest. The gender inequality in terms of economic participation mirrors that in educational inequality with Sri Lanka and Maldives having the least inequality and Pakistan, the highest. However, the gender inequality in terms of political empowerment is greatest in Bhutan and Maldives and least in Bangladesh and India.

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[23] See for more details, UNESCAP, ADB and UNDP (2015).
[24] World Economic Forum (2014).

Figure 5: South Asian countries performance in the Global Gender Gap sub-indices, 2014
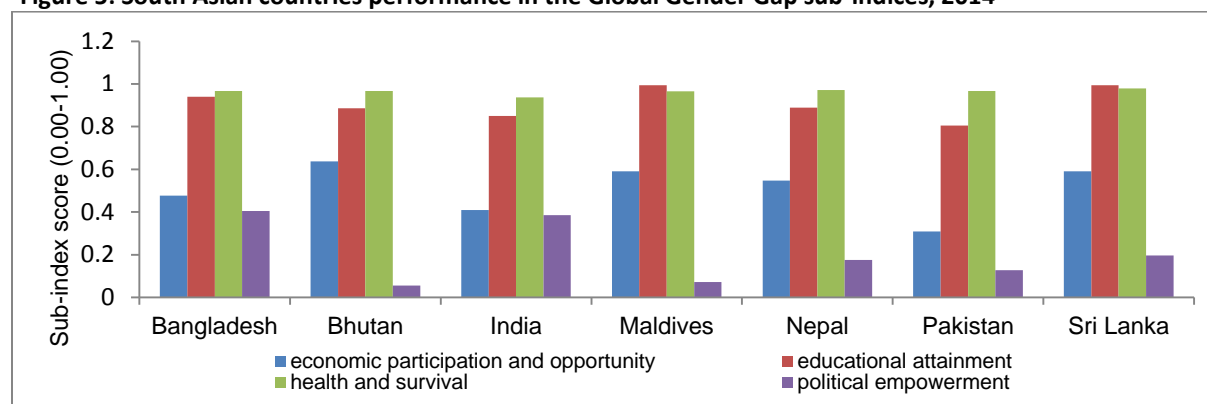
Source: Based on the World Economic Forum (2014).

Gender inequality costs the subregion dearly in terms of opportunities and incomes lost. A recent study by the McKinsey Global Institute (summarized in figure 6) based on an analysis of gender indicators conducted in 95 countries found that India and other South Asian countries have rather low gender parity scores; the score for India is 0.48 while the average for the rest of South Asia is 0.44.[25] India and other countries in South Asia could gain an additional annual 2025 GDP of $700 billion and $100 billion (representing increases of 16% and 11%), respectively, through a "best-in-region" scenario in which countries match the rate of improvement of the fastest-improving country in their region. In a "full potential" scenario in which women play an identical role in labour markets to that of men, the gain could be as much as $2.9 trillion in India and $400 billion in other countries in South Asia in annual GDP by 2025.

Figure 6: Gender parity scores and incremental GDP potential
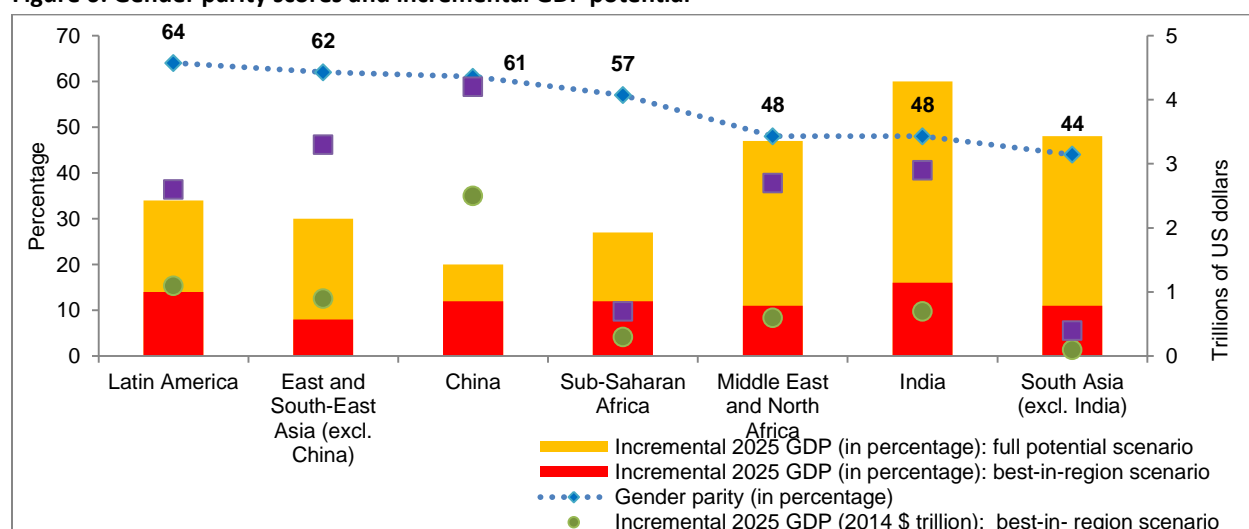
Source: Authors' construction, based on McKinsey Global Institute (2015). *Note*: Gender parity scores (parity = 1.00) are represented as percentages in this figure.

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[25] McKinsey Global Institute (2015) calculates a gender parity score based on 15 indicators, with equal weighting of all indicators, to arrive at an aggregate score at the country level to measure how far each country is from full gender parity.

e. *Providing essential infrastructural services to all*

South Asian countries are characterized by wide infrastructure gaps compared to other countries in Asia and the Pacific and find themselves at relatively poor levels in the recent global ranking of countries' infrastructure development (see figure 7), based on the availability of transport infrastructure, electricity and information and communications technology services.[26] South Asia also lags behind not only in terms of transport infrastructure (SDG 9) but also in basic needs infrastructure, such as access to sanitation (SDG 6) and access to electricity (SDG 7). Access to basic infrastructure services also influences outcomes of other SDG targets. For instance, improved sanitation is found to be leading to better health outcomes in terms of a reduced under-five mortality rate (see figure 8.A). Access to roads also affects health outcomes as evident from the negative relationship between access to roads and the maternal mortality ratio (see figure 8.B). Access to electricity promotes educational attainment (see figure 8.C) and overall human development (see figure 8.D).

Figure 7: Scores and rankings of selected Asia-Pacific countries in the Global
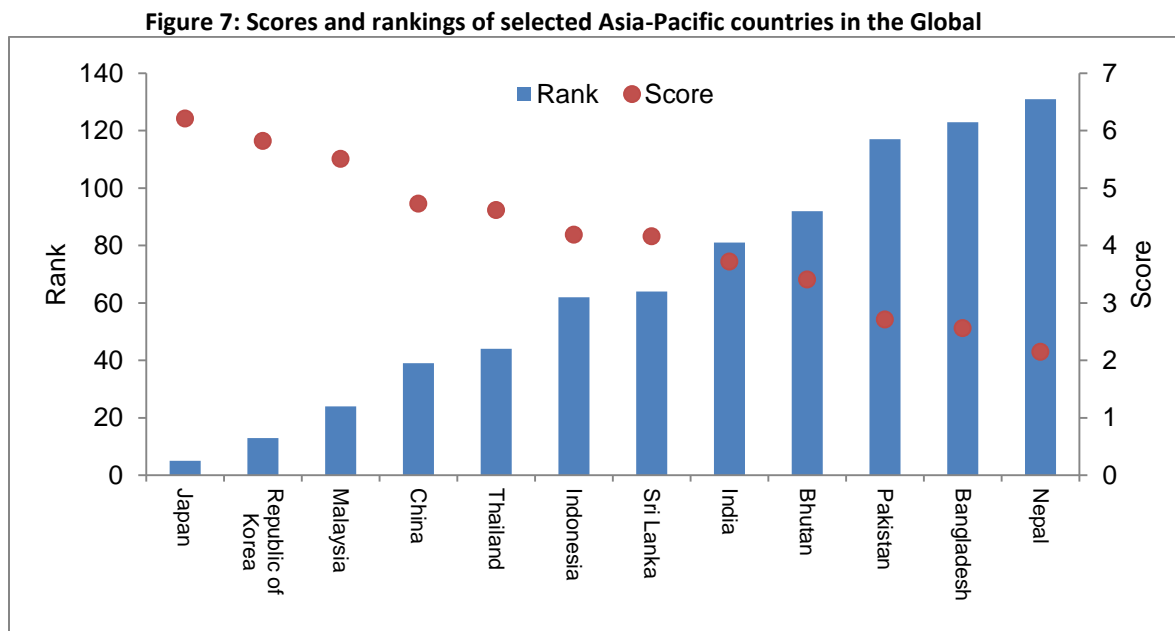
Source: Authors' construction, based on World Economic Forum (2015).

[26] See World Economic Forum (2015).

Figure 8: Interrelationships between infrastructure and other Goals

Figure 8.A: Relationship between improved sanitation and child health
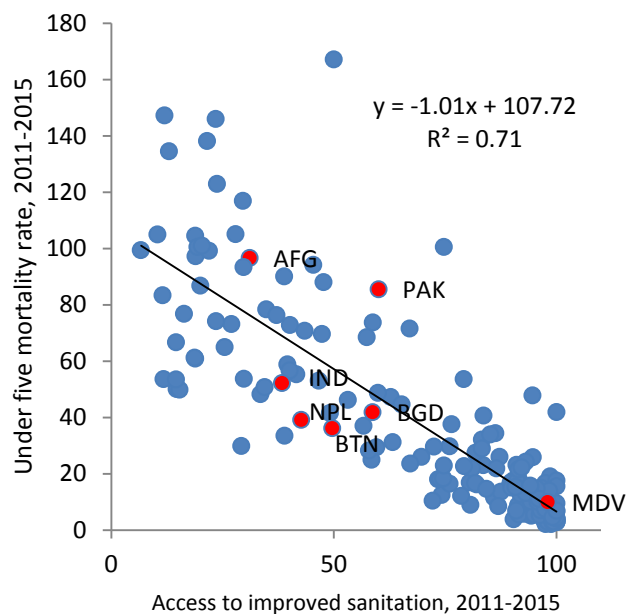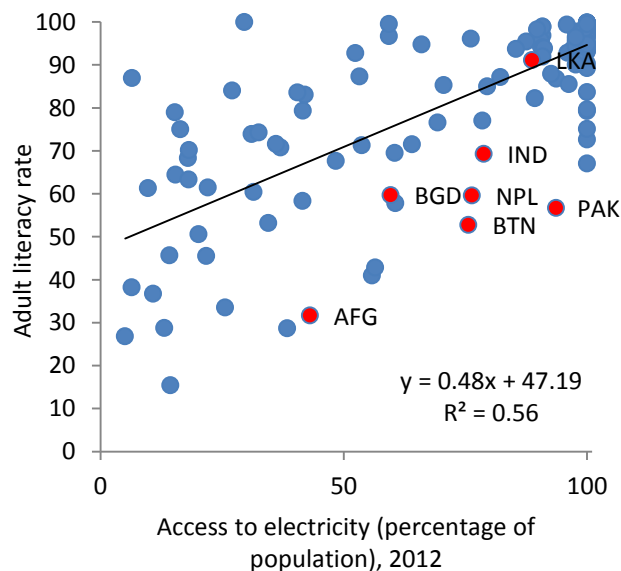

$y = -1.01x + 107.72$
$R^2 = 0.71$

Source: Authors' calculations, based on World Bank, World Development Indicators (accessed October 2015).

**Figure 8.B: Relationship between access to roads and maternal health**

$y = -1.24x + 152.18$
$R^2 = 0.23$
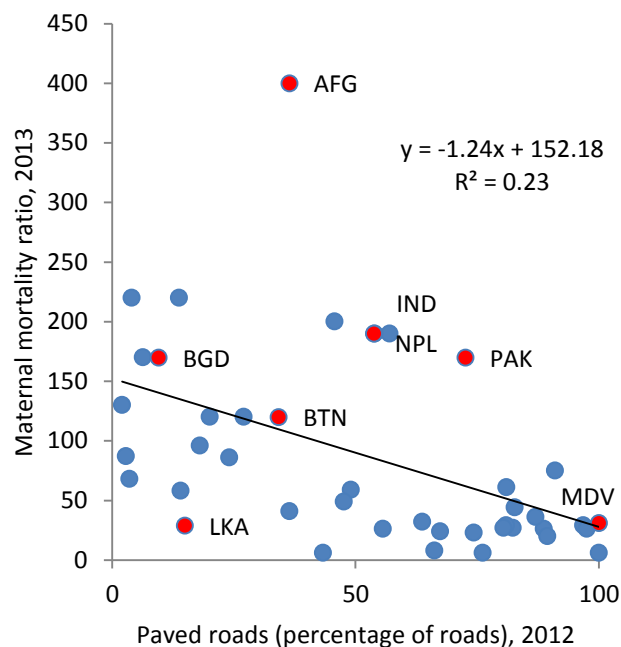
Source: Authors' calculations, based on the UNESCAP Statistical Database (accessed October 2015).

Figure 8.C: Relationship between electricity and educational attainment

$y = 0.48x + 47.19$
$R^2 = 0.56$

Source: Authors' calculations, based on World Bank, World Development Indicators (accessed 13 October 2015).

Figure 8.D: Relationship between energy consumption per capita and human development index score

$y = 0.081\ln(x) + 0.41$
$R^2 = 0.77$
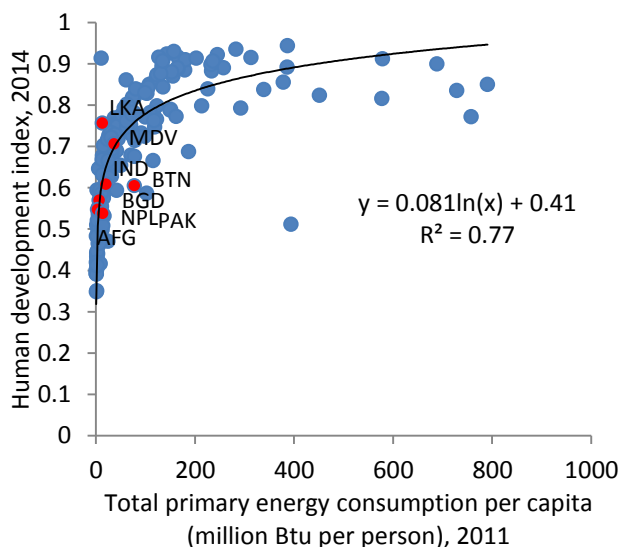
Source: Authors' calculations, based on U.S. Energy Information Administration, International Energy Statistics database (available from www.eia.gov/); and United Nations Development Programme, 2015 Human Development Statistical Tables (available from http://hdr.undp.org/en/data).

Recent research suggests that GDP in Bangladesh could increase by 8% and household incomes by 6% to 8% if investment in utilities, transport and social services infrastructure increased by 20%.[27] In Pakistan, infrastructure investment of 4% could increase long-run GDP by 1.0% to 1.3% and household income by 0.9% to 1.2%, also decreasing poverty by up to 0.4% and reducing inequality.[28]

To close their infrastructure gaps, countries in South Asia require large-scale resources, estimated at about $2.5 trillion, by 2020[29] and $4 trillion to $5 trillion by 2030.[30] India alone is investing $1 trillion in infrastructure, which is being done under the Twelfth Five Year Plan (2012-2017).

f.   Sustainable industrialization, economic growth and decent jobs

The centrality of sustained economic growth has been recognized in the 2030 Agenda in Goal 8, while Goal 9 on industrialization and Goal 1 on poverty reduction are also related to sustained economic growth. South Asia has emerged as the fastest growing subregion in Asia and the Pacific economically, even though it is yet to reach the high economic growth phase witnessed before the onset of the global financial crisis (see figure 9). However, the growth rate of employment creation in South Asia has been declining. Employment growth averaged 1.8% annually in India and 2.6% annually in the rest of South Asia between 1992 and 2012 (see figure 10). GDP growth over the same period was three times faster than employment growth in India (6.8% annually) and 1.8 times faster than employment growth in the rest of South Asia (see figure 11). The employment impact of growth has slowed in the subregion (see figure 12). The employment elasticity of growth – the percentage change in employment for a 1% increase in growth – began declining in the subregion after 2000. In India, the employment elasticity of growth rose briefly at the turn of the millennium, but declined steadily after 2003, with growth generating only half the employment it did before 2003. In the rest of the subregion, employment elasticity declined from above 0.75 in 1999 to about 0.5 in 2005, where it has remained since.

Furthermore, over 80% of workers in the subregion work informally, with little or no protection or rights (see figure 13). Such work is also low in value added and fails to stimulate investments in human capital that can create virtuous cycles of more efficient, inclusive and sustainable growth. A high proportion of informal sector jobs has perpetuated extreme poverty and inequality. South Asia cannot accelerate sustainable development without investing in greater value added through a greater concentration of formal jobs across all economic sectors (see figure 14).
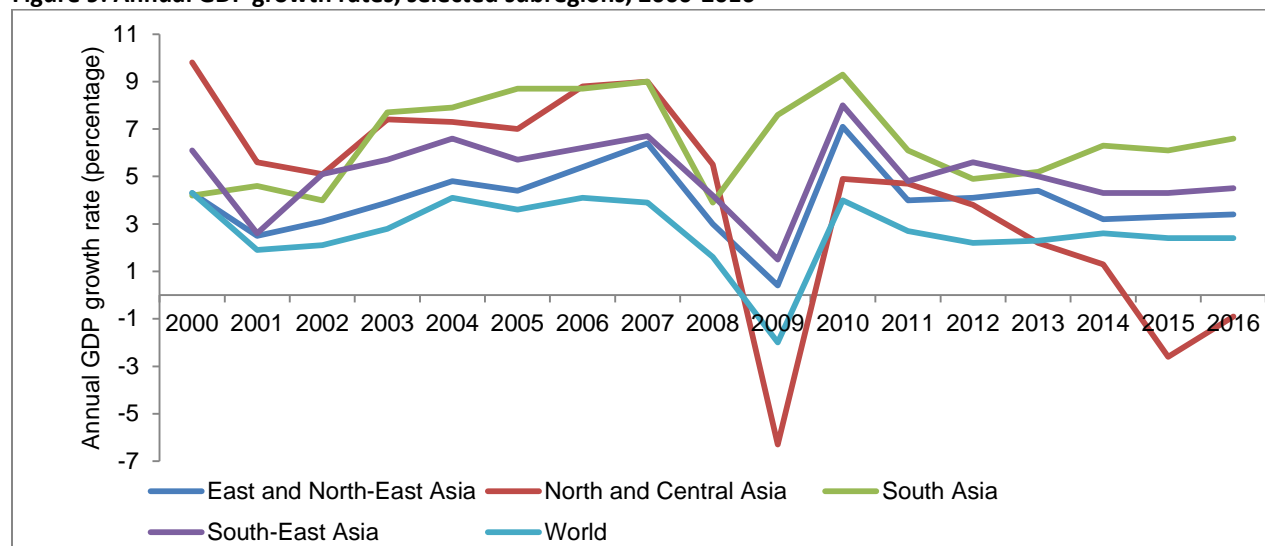
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[27] ADB (2012).
[28] Ahmed, Abbas and Ahmed (2013).
[29] Andrés, L., D. Biller, and M.H. Dappe (2013).
[30] Ernst & Young (2015).

**Figure 9: Annual GDP growth rates, selected subregions, 2000-2016**

Sources: UNESCAP (2016a, 2016b) and United Nations, Department of Economic and Social Affairs, Development Policy and Analysis Division (2016). *Note*: Data for 2015 and 2016 are estimates and forecasts, respectively.

Figure 10: Employment growth in South Asia, 1992-2012 (average annual percentage change)
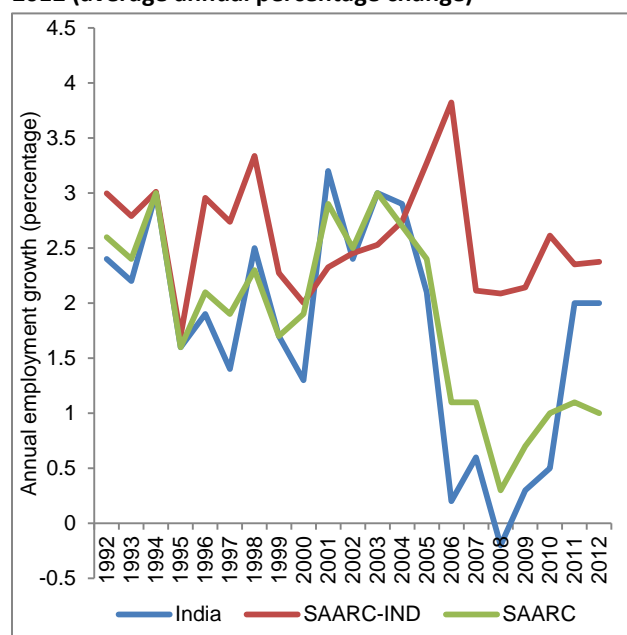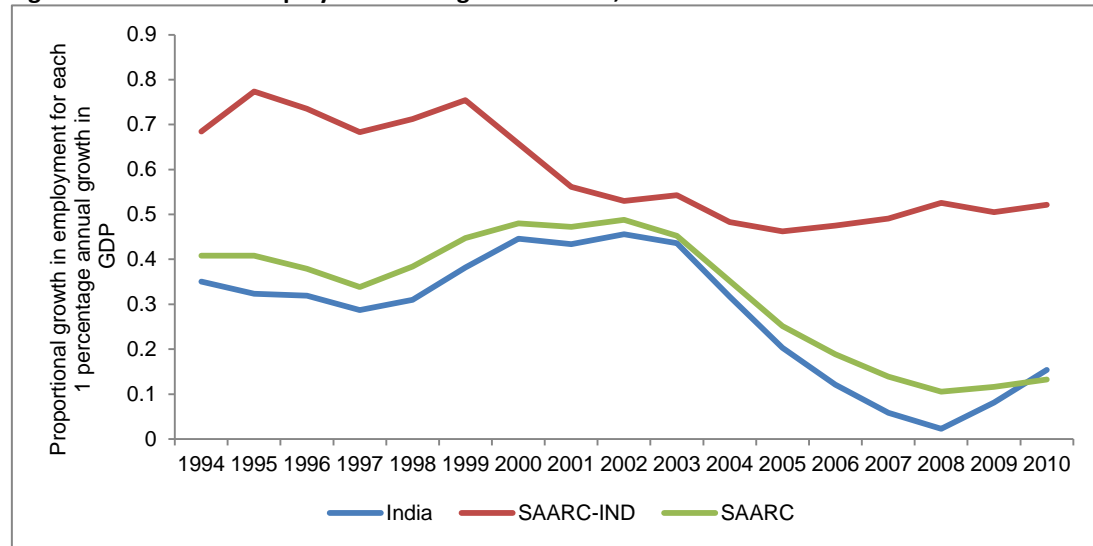

Source: Authors' calculations, based on the UNESCAP Statistical Database (accessed August 2015).

**Figure 11: Employment and GDP growth in South Asia, 1992-2012 (average annual percentage change)**
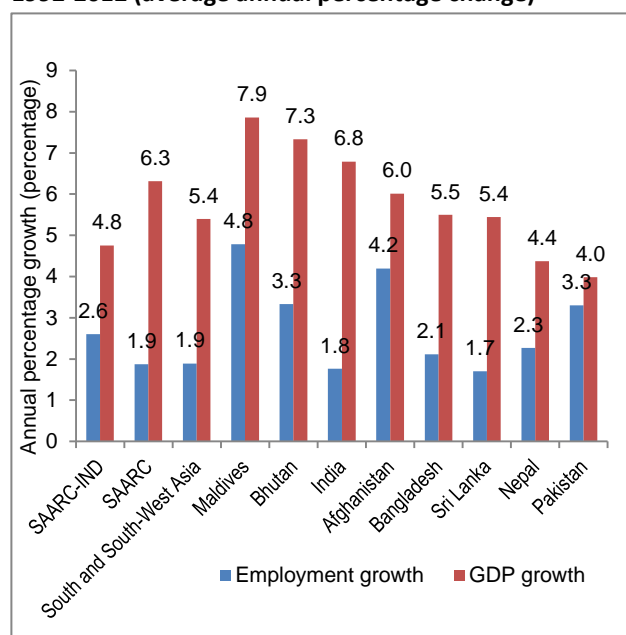
Source: Authors' calculations, based on the UNESCAP Statistical Database (accessed August 2015).

Figure 12: South Asia employment: GDP growth trends, 1994-2010

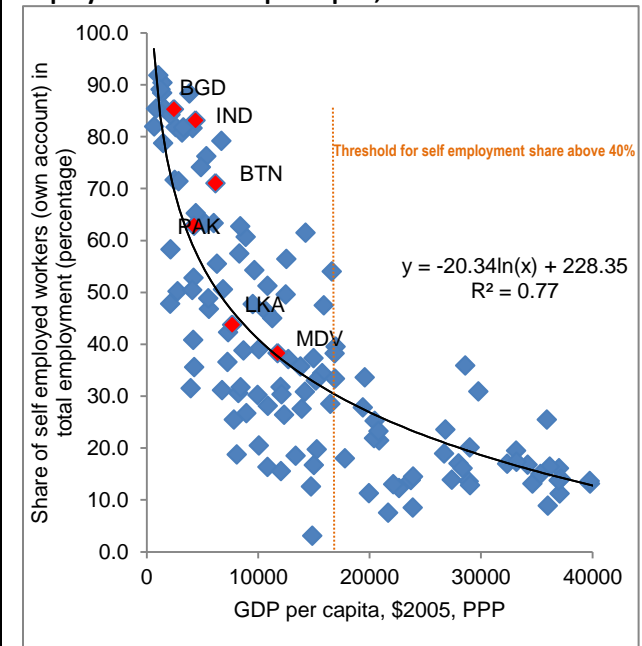*Source*: Authors' calculations, based on the UNESCAP Statistical Database (accessed August 2015).

Figure 13: Rates of informal employment, South Asia (percentage)
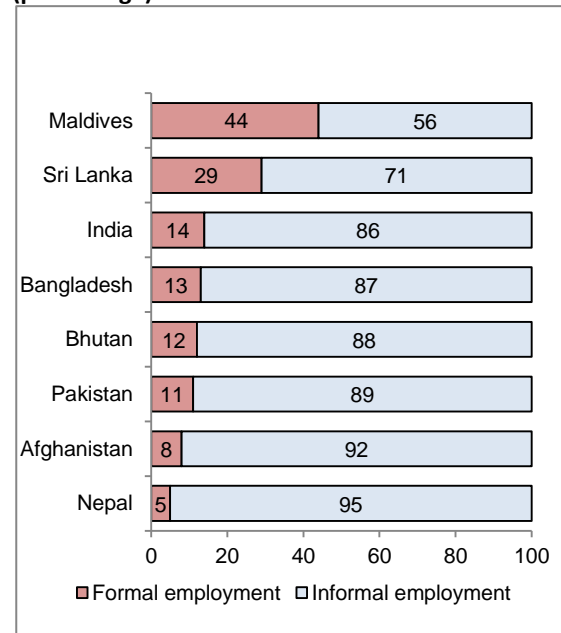
Source: Author's construction based on Nayar and others (2012), figure 3.11.
Note: The year varies from 2004 to 2010 for different countries based on the available data.

Figure 14: Self-employment (own account) in share of employment and GDP per capita, circa 2010
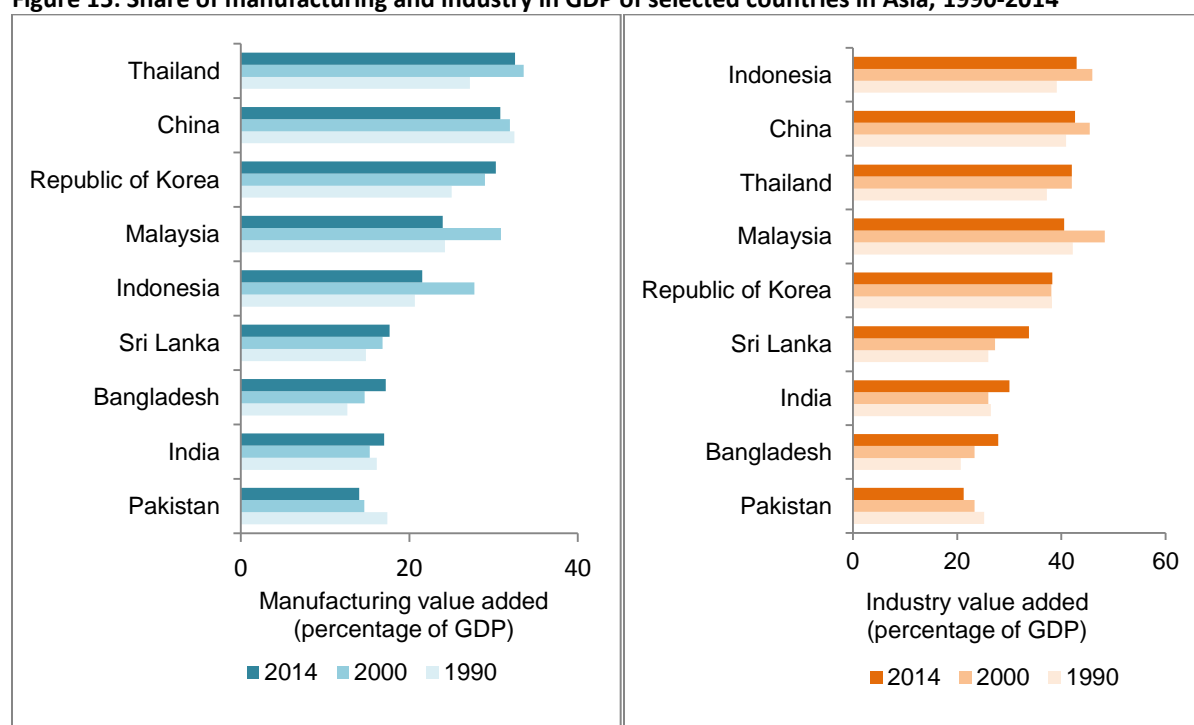

$$y = -20.34\ln(x) + 228.35$$
$$R^2 = 0.77$$

Source: Authors' calculations, based on World Bank, World Development Indicators (accessed August 2015).
Note: PPP = purchasing power parity.

The creation of more productive jobs in the formal sector for the youth population of South Asia is linked with the nature of structural transformation in the subregion. For example, structural transformation away from agriculture to manufacturing would require far greater

formal and productive work. A Lewisian structural shift in employment from rural agricultural underemployment to greater value added urban manufacturing as countries develop would boost inclusive growth, absorbing the excess and low productivity rural labour supply and driving up work and wages in urban industry.[31] The structural transformation in South Asia has moved from agriculture towards services, bypassing industry, which has seen its share in GDP remaining at virtually the same level since 1991. In fact, the share of industry and manufacturing in value added in countries in South Asia is among the lowest in the Asian and Pacific region (see figure 15). This has implications for the employment elasticity of economic growth, as industry, especially manufacturing, generates jobs directly in addition to a substantial proportion of jobs created indirectly in other sectors through extensive backward and forward linkages.

Figure 15: Share of manufacturing and industry in GDP of selected countries in Asia, 1990-2014
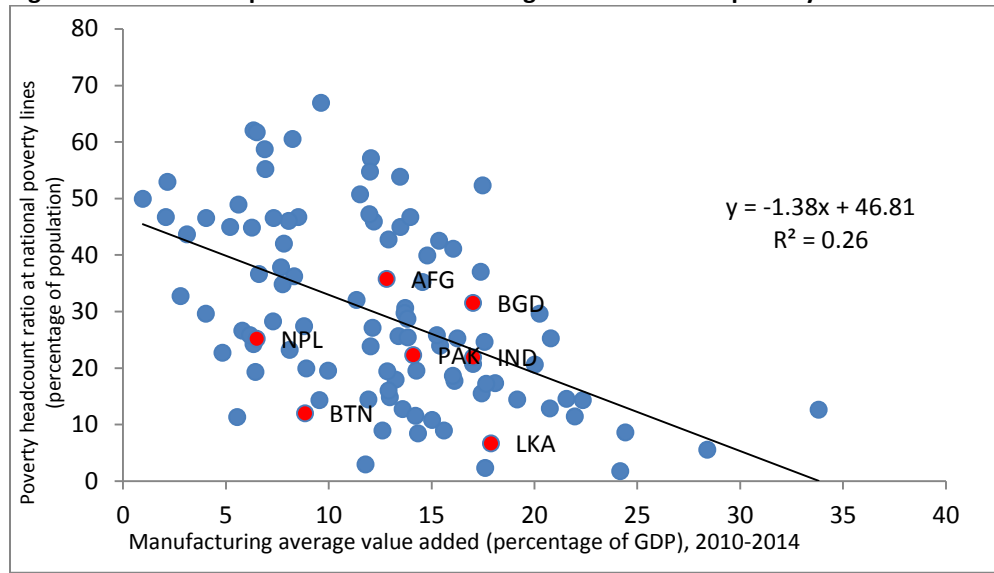

Source: Authors' calculations, based on World Bank, World Development Indicators (accessed 28 October 2015).

Fostering manufacturing can lead to faster poverty reduction through job creation and other externalities than through growth generated in other productive sectors. Figure 16 shows the negative relationship observed between the poverty headcount ratio and the share of manufacturing value added in GDP.

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[31] See Lewis (1954).

Figure 16: Relationship between manufacturing value added and poverty

Source: Authors' calculations, based on World Bank, World Development Indicators (accessed 16 October 2015).

Therefore, the SDG target of increasing the share of industry in GDP and doubling it for LDCs is particularly relevant for South Asia for its potential to create decent productive jobs and foster economic growth. However, industrialization should be fostered in a more sustainable manner than in the past with a focus on efficient use of energy and raw materials and emphasis on recycling.

g.   *Exploiting the potential of renewable energy*

With greater reliance on renewable energy resources South Asian countries can not only address the energy scarcities but also save valuable foreign exchange that is currently spent on imports of hydrocarbons. Nepal is an important example of a country suffering from a high degree of power scarcity, with up to 14 hours of power cuts each day in the city of Kathmandu, despite the country being endowed with some of the greatest hydroelectric generation potential in per capita terms in the world. By contrast, Bhutan is harnessing its hydropower potential to generate sustainable growth. South Asia can tap its vast solar and wind energy potential. South Asian countries can also switch over to cleaner fuels such as natural gas and clean coal technologies in coal-based power generation. They can benefit from developing a unified energy market, linked by energy grids and pipelines, and forums for sharing good practices across the subregion in enhancing energy conservation and energy efficiency.

4.   Modelling the Impacts of an SDG-based policy strategy for South Asia

The key policy strategies identified in the previous section map the 2030 Agenda for South Asia's situation and context. In this section we analyze the impacts of adopting these policy strategies in terms of economic and social gains. The available data sets and modelling

tools allow examination of impacts of three key policies aligned with SDGs 2, 8 and 9, namely an industry-oriented structural transformation (target 8.2), sustainable agriculture productivity boosts (target 2.3), and increased efficiency in the economy by removing supply bottlenecks and fostering innovation (target 9.2).

a.   *Modelling framework and methodology*

The issue of the data and monitoring of the SDGs is a critical ongoing process of intergovernmental negotiation, spearheaded by the United Nations Statistical Commission and the associated Interagency Expert Group on SDG Indicators (IAEG-SDG) and the outcomes of the process will help guide the data priorities for analysis, projection and simulation of the impacts of development trends and policies for achieving the SDGs and financing the required policies.[32] Different methodologies exist for analyzing the empirical impacts of the variety of different economic, social and environmental development dimensions that the SDGs encompass. For example, Schmidt-Traub (2015) identifies five different types of empirical methodologies for estimating SDG needs assessments, one of which is computable general equilibrium modelling (CGE).[33]

In the context of South Asia, this paper presents the results of an application of a CGE to consider the differentiated impacts of selected policies for five South Asia countries in achieving the SDGs. The UNESCAP-SANEM South Asia Model combines country models for the five countries of South Asia; Bangladesh, India, Nepal, Pakistan and Sri Lanka, which combined make up 98.2 per cent of the population in the subregion.[34] The model relies upon updated social accounting matrices for each country that map key sectors' transformation of resources based on national data for 2011-2012.[35]

The UNESCAP-SANEM South Asia Model was applied here to consider the impacts of a policy strategy that integrates three key policies aligned with SDGs 2, 8 and 9, namely an industry-oriented structural transformation (target 8.2), sustainable agriculture productivity boosts (target 2.3), and increased efficiency in the economy by removing supply bottlenecks and fostering innovation (target 9.2).

Within the 2030 Agenda, SDG-2 on ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture includes target 2.3 to, by 2030, double

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[32] See United Nations Statistical Commission's Inter-agency and Expert Group on Sustainable Development Goal Indicators (IEAG-SDGs), http://unstats.un.org/sdgsmeetings/iaeg-sdgs-meetings-03.html
[33] Schmidt-Traub (2015).
[34] The UNESCAP-SANEM South Asia Model, has been developed under the direction of Prof. Selim Raihan of the South Asia Network on Economic Modelling at Dhaka University, Bangladesh in collaboration with UNESCAP.
[35] A description of the computable equilibrium model structure and social accounting matrices used in the UNESCAP-SANEM Model is given in Raihan (2015).

the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment. SDG 8 on sustainable growth includes target 8.2 to achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors. This would provide positive impacts on total factor productivity. SDG 9 on resilient infrastructure, inclusive and sustainable industrialization and fostering innovation includes target 9.2 to promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries.

The model simulates the impact of policies under SDG targets 2.3, 8.2 and 9.2 by considering the combined impact policies would have in three specific scenarios. Firstly, for the case of policies that would result in shocks that double agricultural productivity in grains in all the countries, relative to their baseline productivity. Secondly, the result of policies to stimulate industrialization that would double the ratio of industry as a share of total output for least developed countries of Bangladesh and Nepal, and increase the share of industry in total output by 1.5 times for India, Pakistan and Sri Lanka. Finally, the model also includes the result of policies that increase total factor productivity by 5% above the baseline for all five countries included in the simulation.

b.   *Impact of selected SDG policy strategies*

The results of the application of the UNESCAP-SANEM Model to the selected SDG policy strategies show that a successful policy strategy for just these three associated SDG targets would increase GDP by between 15% and 30% across the five countries of South Asia on top of the business-as-usual scenario. In addition, if countries can improve their pro-poor and job-creating growth by 25% above the best historical performance over the period 1990-2015, additional 71 million people would be lifted out of extreme poverty and an additional 56 million jobs would be created by 2030 in these five countries (see figure 17).

The UNESCAP-SANEM Model also permits analysis of the positive spillover effects that would result from sustainable and inclusive policy actions that target one sector (see figure 18). Under the current simulated policy strategy, even the narrow sectoral priorities of doubling grain productivity in agriculture and doubling industry's share of output would produce large spillovers to other sectors. For grain productivity, industry and services would also experience increased production, over 22% of the total increase that agriculture experiences. For industrialization, the increased production would spill over to increased production in agriculture and services, representing more than half the resulting increased output.

Figure 17: Selected impacts of an SDG-based productivity and industrialization policy strategy in South Asia
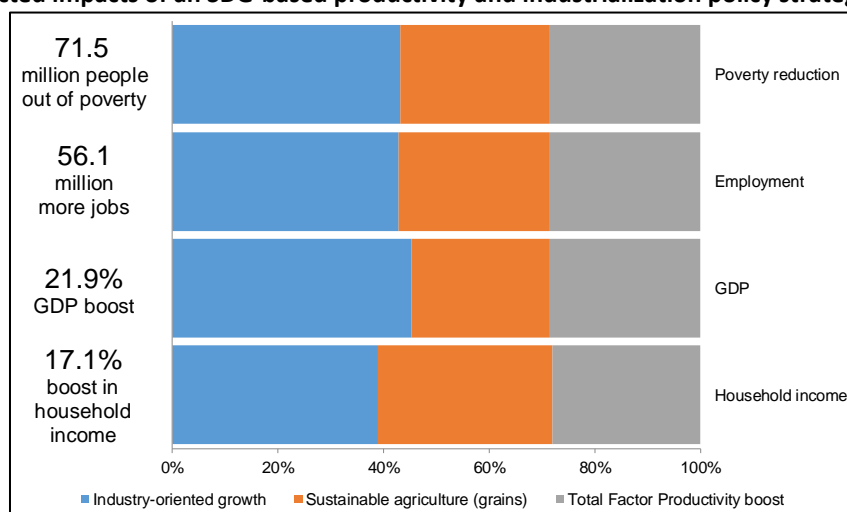
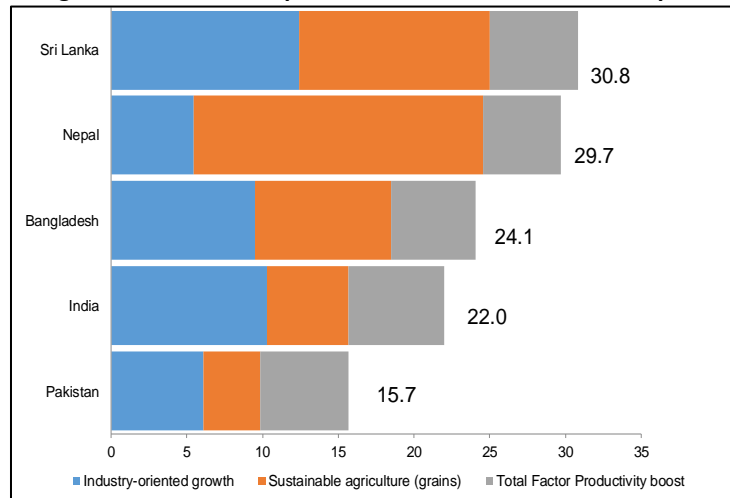*Source*: Based on the UNESCAP-SANEM South Asia Model.

Figure 18: Spillover effects: Share of sector policy impact that boosts production in non-target sectors
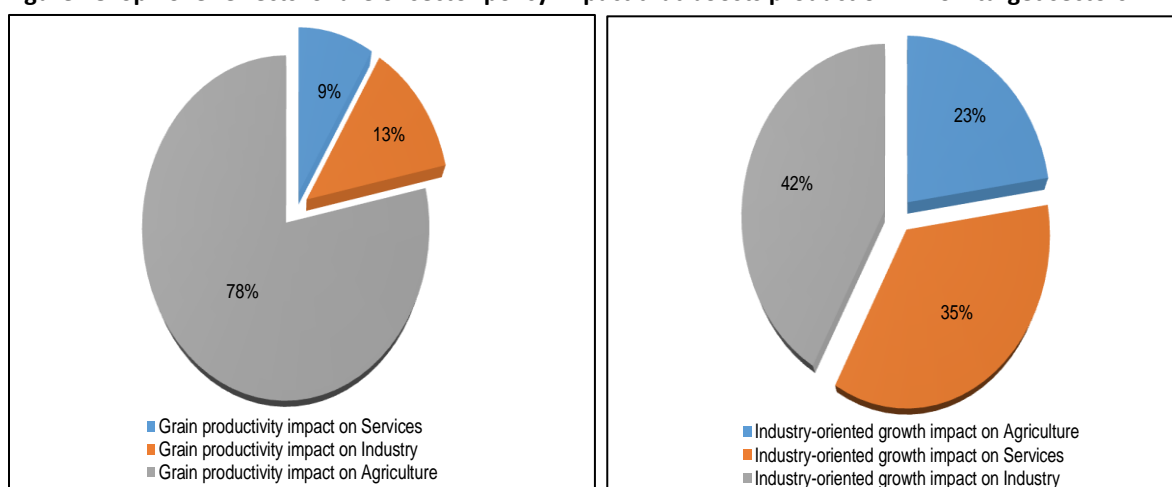
Source: Based on the UNESCAP-SANEM South Asia Model.

At the national level, all countries in South Asia would experience significant gains from implementing the three policy strategies. Of the five countries contained in the model, Sri Lanka and Nepal would experience the biggest impacts, with GDP boosted around 30% beyond its baseline (See figure 19). Bangladesh and India would increase their GDP by more than 20% while Pakistan would experience a GDP increase of nearly 16%.

Figure 19: National impacts on GDP from an SDG-based productivity

Source: Based on the UNESCAP-SANEM South Asia Model.

National impacts of the policy strategy on poverty and employment are naturally greater in larger countries (see figure 20). In India alone over 35 million people would be lifted out of poverty and more than 25 million jobs would be created. In Sri Lanka, with its much smaller population, over 370,000 people would be lifted out of poverty and nearly 740,000 jobs would be created. Another notable effect is the equal contribution of each policy to this overall result.

Figure 20: National impacts of policy strategy on poverty and employment in South Asia
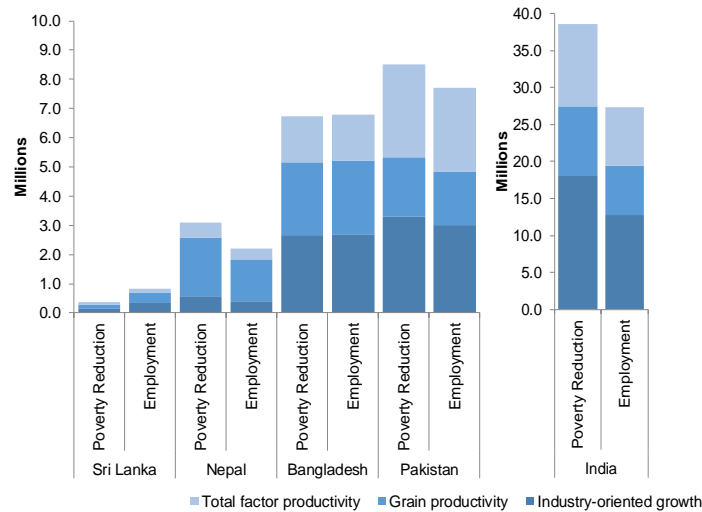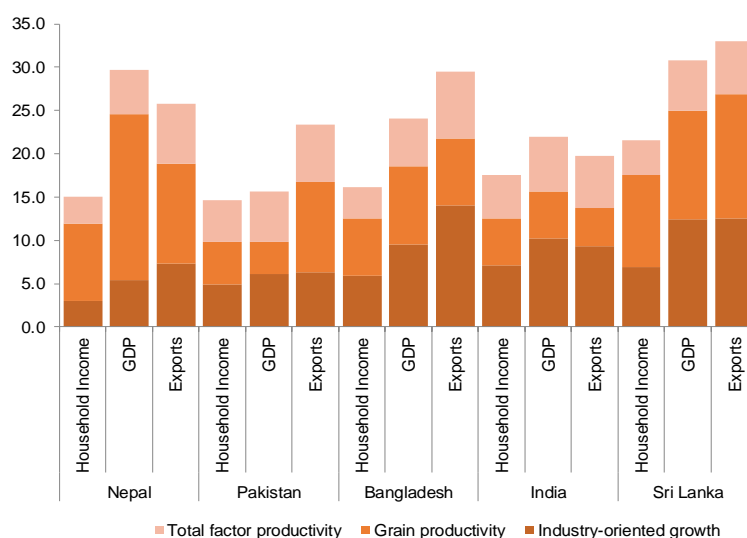

Source: Based on the UNESCAP-SANEM South Asia Model.

The policy strategy would also have positive impacts at the national level, across the board, not only on GDP but also on exports and household income (see figure 21). Across the countries, household incomes would increase by at least 15% and as high as 25% in Sri Lanka.

Sri Lanka would also experience the largest relative export gains from the strategy, but exports would increase over 25% - 30% for Bangladesh, Nepal and Sri Lanka.

Figure 21: National impacts of policy strategy on exports, GDP, and household income in South Asia

Source: Based on the UNESCAP-SANEM South Asia Model.

The benefits from implementing just a few of the SDG policy strategies are significant. Implementing concrete policy actions that adopt all seven SDG policy strategies would maximize the spillovers between priorities with significant multiplier benefits for populations and countries of the subregion towards achieving the SDGs.

5. Concluding remarks

For a subregion home to nearly 40% of the world's poor, the 2030 Agenda presents a unique opportunity for South Asia to eradicate poverty and other deprivations and provide a life of dignity to all within a generation. This paper discussed key SDG policy strategies that build upon the interrelationships between the Goals and targets that would help the subregion achieve the SDGs. This paper then applies a new computable general equilibrium framework, called the UNESCAP-SANEM Model, developed for SDG analysis in South Asia to estimate the impact of three strategic policy priorities of sustained, broad-based and job-creating rapid economic growth through industry-oriented structural transformation; and addressing food security and hunger with agricultural productivity improvements through sustainable agriculture. These priorities reflect specific SDG targets for SDG 2 on doubling the agricultural productivity and incomes of small-scale food producers; SDG 8 on higher levels of economic productivity through diversification, through a focus on high-value added and labour-intensive sectors; and SDG 9 targets related to resilient infrastructure, inclusive and sustainable industrialization. The results of the simulations show that a successful policy strategy for just these three SDG targets would

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increase GDP by between 15% and 30% across the five countries of South Asia on top of a business-as-usual strategy and has the potential for an additional 71 million people to be lifted out of extreme poverty and an additional 56 million jobs to be created by 2030 in these five countries.

While further research and the ongoing specification and definition of final indicators for assessing SDG progress continues, applications of models such as the UNESCAP-SANEM Model can be useful in highlighting significant practical and immediate policy options that can be applied by countries in South Asia to accelerate SDG progress.

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