CHAPTER II

Charting the Course to A New Normal

Introduction

Though GDP growth has mostly decoupled from the COVID pandemic, as discussed in Chapter 1, the crisis itself has left multiple economic scars, from remaining supply disruptions and inflationary pressures to large fiscal deficits and financing gaps on the balance of payments. The headwinds from the war in Ukraine and a precarious environment for investors amid global uncertainty have deepened these scars. Under these circumstances, the challenges ahead are extraordinarily complicated for South Asian policymakers. Though South Asia has limited trade and financial links with Russia and Ukraine, higher commodity prices in global markets are expected to drag down this year's GDP growth. The high oil prices and uncertainty in international oil markets are an incentive to accelerate the transition to a low-carbon development path. Such a path will boost energy security and make development more sustainable. The chapter illustrates this by simulating the region-wide macroeconomic impacts of carbon pricing.

The chapter is organized as follows. Section 2.1 discusses the outlook for the region's growth, including forecasts on external balances and poverty. Section 2.2 considers some scenarios to illustrate the risks to the forecasts from higher prices and potential monetary policy responses and discusses the fiscal and financial vulnerabilities from external shocks as the financial sectors return to a post-COVID new normal. Section 2.3 illustrates why putting green taxes at the center of the region's development strategy is highly consistent with inclusive and sustainable growth.

2.1 Recovery continues despite headwinds from Europe

Growth going forward will resume roughly to pre-COVID levels. South Asia's GDP is projected to grow by 6.6 percent in 2022 and 6.3 percent in 2023 (Table 2.1), not as high as the 7.7 percent growth rate in 2021 which represented the strong bounce-back from COVID.

Offsetting the continued recovery from the health crisis is the impact of the war in Ukraine, which has clouded the outlook for global economic recovery. High commodity prices will weigh on import demand, while lower growth abroad will lead to softening demand for South Asian exports, especially from Europe (see below). The war and consequent sanctions are expected to subtract about 1.3 percentage points of GDP growth in 2022 and 0.6 percentage points in 2023, largely through indirect trade channels, though a better-than-expected recovery of services exports will offset this by about 0.3 percentage points. As a result, the 2022 growth forecast for the region has been revised down by 1.0 percentage point compared to January 2022. The forecasts assume that there will not be any new COVID waves affecting the region.

Table 2.1. The recovery in South Asia downgraded but remains strong

	Country fiscal year	Real GDP growth at constant market prices (percent)				Revision to forecast from January 2022 (percentage point)	
Calendar year basis		2020	2021(e)	2022(f)	2023(f)	2022(f)	2023(f)
South Asia region (excluding Afghanistan)		-4.5	7.7	6.6	6.3*	-1.0	0.2*
South Asia region (excluding Afghanistan and Sri Lanka)		-4.6	7.8	6.7	6.3	-1.1	0.2
Afghanistan	January to December	-1.9	--	--	--	--	--
Maldives	January to December	-33.5	31.0	7.6	10.2	-3.4	-1.8
Sri Lanka	January to December	-3.6	3.5	2.4	--	0.3	--
Fiscal year basis		**FY20/21**	**FY21/22(e)**	**FY22/23(f)**	**FY23/24(f)**	**FY21/22(f)**	**FY22/23(f)**
India	April to March	-6.6	8.3	8.0	7.1	0.0	-0.7
		FY19/20	**FY20/21(e)**	**FY21/22(f)**	**FY22/23(f)**	**FY21/22(f)**	**FY22/23(f)**
Bangladesh	July to June	3.4	6.9	6.4	6.7	0.0	-0.2
Bhutan	July to June	-2.4	-3.7	4.4	4.7	-0.7	-0.1
Nepal	mid-July to mid-July	-2.1	1.8	3.7	4.1	-0.2	-0.6
Pakistan	July to June	-1.0	5.6	4.3	4.0	0.9	0.0

Source: World Bank Macro Poverty Outlook, staff calculations.
Note: (e)=estimate, (f)=forecast. * = excludes Sri Lanka, which has no forecast for 2023. GDP measured in 2015 prices and market exchange rates. To estimate regional aggregates in the calendar year, fiscal year data is converted to calendar year data by taking the average of two consecutive fiscal years for Bangladesh, Bhutan, Nepal, and Pakistan at 2015 constant US$, for which quarterly GDP data are not available. Pakistan is reported at factor cost. Afghanistan is not included in the regional aggregates as Afghanistan is not producing statistics so there are no estimates or forecasts beyond 2020.

Only two countries in the region are currently reporting GDP figures on a calendar year basis: Maldives and Sri Lanka.

- The halting of data collection in **Afghanistan** precludes the possibility of a forecast. Nonetheless, the cutoff of grants and the absence of a working payments system are hampering economic activity and adding to the humanitarian crisis. The country is in survival mode and food insecurity is very high, with no clear end in sight.
- In **Maldives**, real GDP is projected to stay strong as the remarkable recovery in 2021 extends into 2022. Real GDP will grow by 8.5 percent in 2022 and 9.1 percent in 2023. Prospects were for even higher growth in 2022, but the abrupt decline of visitor arrivals from Russia and Ukraine will dampen the momentum. The expected resumption of tourism from India as flights resume will partially help fill the void left by the decline in Russian and Ukrainian tourists in February 2022. By 2023 tourism from China may also resume to pre-COVID levels.
- In **Sri Lanka,** a series of shocks amid high debt will continue to hamper growth prospects, as import restrictions have stepped up to a new level. The immediate outlook is highly uncertain given the unsustainable fiscal and external financing positions of the country. Assuming the economy can muddle through long enough to close the financing gap, growth for 2022 would be on the order of 2.4 percent, though this could quickly change as the effects of power cuts, fuel scarcity, and widespread shortages of inputs weigh in. The forecast implies no per capita growth over a 4-year period ending in 2022.

Bangladesh, Bhutan, and Pakistan report GDP in fiscal years that run from July 1 to June 30, while Nepal reports from mid-July to mid-July of the following year. This means that there is much more certainty about the forecast for the fiscal year ending in mid-2022.

- In **Bangladesh**, GDP is expected to increase by 6.4 percent in FY2021/22 and 6.7 percent in FY2022/23. While economic disruptions related to the COVID-19 pandemic are waning, garment exports are expected to remain strong if Bangladesh is able to maintain its market share in Europe and the United States. However, a slowdown in growth in major export markets, particularly the European Union, could, in turn, hamper export growth. GDP growth is expected to remain resilient in FY2022/23, supported by strong domestic demand.
- In **Bhutan**, growth in FY2021/22 is projected to be 4.4 percent, rising to 4.7 percent in FY2022/23. The expected easing of strict internal mobility restrictions in the second quarter 2022 on the back of a highly successful COVID vaccination campaign should enable the authorities to finally allow the return of international tourists and migrant workers from India (easing some of the labor shortages in construction and other services during the pandemic). In the medium term, growth will be driven by the new hydro plants coming on stream.

- In **Nepal**, GDP is projected to grow by 3.7 percent in the current fiscal year and by 4.1 percent by FY22/2023, led by the recovery of the services sector (amid now-high COVID vaccination rates), including digital services. The outlook for remittances is also very strong. Industry sector growth is projected to be supported by increased production of hydropower including from the recently completed Upper Tamakoshi plant.
- In **Pakistan**, GDP growth is expected to slow to 4.3 percent in FY2021/22 (ending June 2022) and to 4.0 percent in FY2022/23. This comes amid monetary tightening measures that began in September 2021, high base effects from the previous year, and continued high inflation eroding real private consumption growth. Beyond that, the expectation is for growth to gradually recover as structural reforms to support macroeconomic stability, increase domestic revenue collections, improve the financial viability of the energy sector, and enhance export competitiveness begin to pay off.

Finally, India's current (FY2022/23) fiscal year runs from April 1, 2022, to March 31, 2023. That means that most of the recovery from the major COVID waves is already reflected in the last fiscal year growth numbers.

- **India** is expected to grow by 8 percent, slightly below its 2021 rate as some of the investment programs spill over into the 2022/23 fiscal year. The recovery in private consumption will be constrained by the incomplete recovery in the labor market, and inflationary pressures weighing on households' purchasing power. The negative impact of the war in Ukraine on FY2022/23 growth is expected to be moderate, so growth will begin to taper off in the second half of 2022[1]. Credit offtake in the infrastructure sector is expected to continue growing in 2022 (power and roads). Business expectations and investment, which had improved, might sour amid elevated input prices and a faster-than-anticipated increase in borrowing costs. The travel services balance may improve as India allows international flights to resume, while exports of computer and professional services are expected to remain strong.

Consumption will again make the largest contribution to domestic demand in 2022 and 2023. As Figure 2.1 shows, the contribution of various sources of demand to growth in 2023 will begin to take on a more "normal," pre-COVID pattern as rebuilding begins.[2] Private consumption growth in 2022 will be about the same as during the pre-pandemic period at 6.5 percent. Continued pent-up demand following the Omicron wave in the early months will be offset by lower purchasing power due to rising prices, as the war in Ukraine will reduce the supply of food and fuel and lead to other supply bottlenecks. Government consumption is forecast

1 Growth in the April-June period will be double-digit, due to the base effects from the same period in 2021, during which the COVID Delta variant impacted India considerably.

2 The forecast for 2023 excludes Sri Lanka. In 2021, Sri Lanka's share of South Asia's GDP was 2.5 percent.

to grow 10 percent, reflecting continued momentum in India, Pakistan and Bangladesh. Investment growth will still be higher than the 2010-2019 average in large part due to the base effects of the recovery. Indeed, public investment will help drive the recovery in the latter half of 2022 amid weakened consumption growth due to inflation, higher fuel prices and much higher import costs. Net exports will be a drag on growth as imports grow faster than exports.

Table 2.2. All demand components are projected to continue rising, with price effects pushing up imports

	South Asia real GDP and demand components growth (percent)			Revision to forecast from January 2022 (percentage point)	
Calendar year basis	2021(e)	2022(f)	2023(f) 1/	2022(f)	2023(f) 1/
GDP	7.7	6.6	6.3	-1.0	0.2
(GDP excluding Sri Lanka) 1/	7.8	6.7	6.3	-1.1	0.2
Private consumption	8.3	6.5	6.1	-1.0	0.5
Government consumption	7.9	9.6	4.5	0.1	-0.7
Investment	15.4	7.2	7.3	-2.8	0.2
Exports	18.9	7.4	9.0	-0.2	0.4
Imports	28.9	10.1	8.7	1.7	-0.5
Net exports	-64.5	-16.9	-7.7	-6.1	3.3

Source: World Bank Macro Poverty Outlook, staff calculations.
Note: (e)=estimate, (f)=forecast. 1/ No 2023 forecasts have been produced for Sri Lanka, so 2023 growth numbers exclude Sri Lanka. South Asia GDP and its components are calculated using country-level fiscal year numbers converted to calendar year. Afghanistan is not included in the calculations.

Figure 2.1. The composition of broad demand categories has normalized

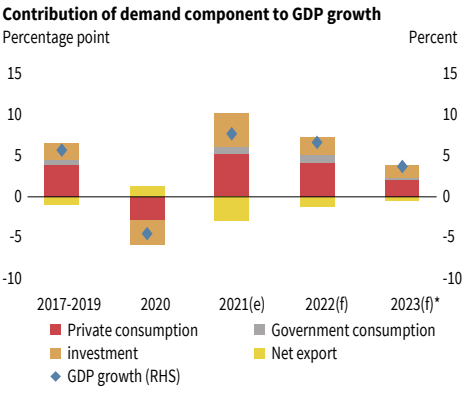
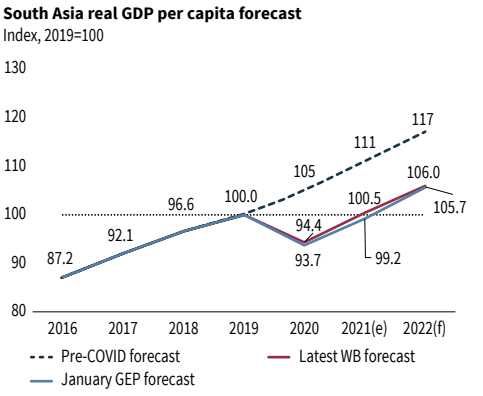


Figure 2.2. South Asia's per capita income in 2022 will be 6 percent higher than pre-pandemic levels

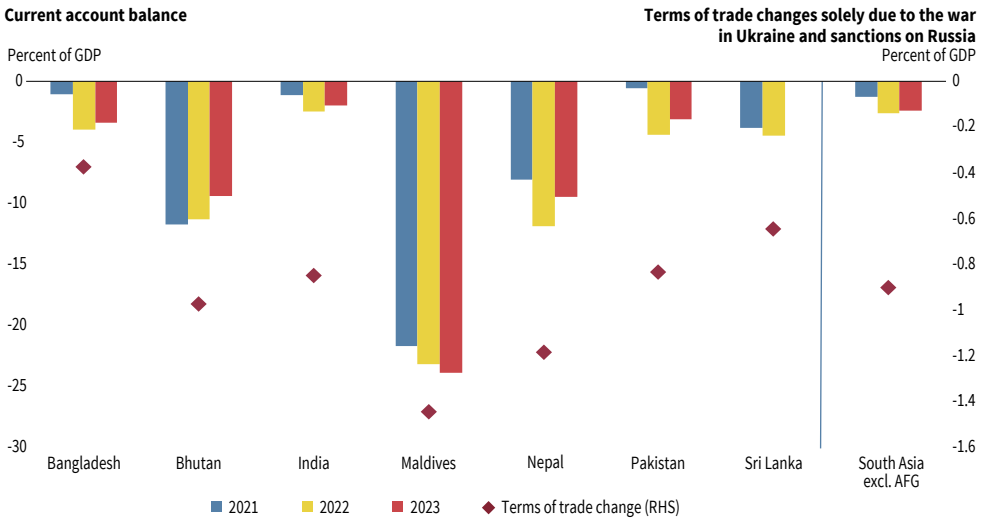


Source: World Bank Macro Poverty Outlook (MPO), staff calculations.
Note: (e)=estimate, (f)=forecast. South Asia aggregates shown are in the calendar year. Afghanistan is not included in the calculations. The value of stacked bars in Figure 2.1 does not exactly sum to GDP growth due to inventory changes and statistical discrepancies. No 2023 forecasts have been produced for Sri Lanka, so (the contribution of demand components to) 2023 GDP growth excludes Sri Lanka.

Inflation is expected to rise in 2022. These projections assume normal monetary policy response, but other options will be discussed below. Inflation is expected to rise in all countries in 2022 and reach double digits in Pakistan and Sri Lanka before subsiding in 2023. For the region as a whole, headline inflation is expected to be 7.0 percent in 2022 and 5.8 percent in 2023 (up from 6.7 percent in 2021).

The upheaval in commodity prices will have an immediate and direct impact on current account balances in 2022. Demand for imports will return, but the commodity price surge will play a dominant role in the higher import bill expected through most of 2022, leading to widening deficits for the region in 2022 and a small improvement in 2023 (Figure 2.3). Even before the war in Ukraine, most countries were already expected to see their current account balances deteriorate in 2022 amid higher import prices and pent-up demand for imports carrying over from 2021 (exports of goods had recovered strongly in 2021, see Box 1.2). The terms-of-trade impact solely due to expected oil price increases triggered by the war and related sanctions is expected to have an immediate impact of 0.9 percent for the region. But it ranges between 0.38 and 1.4 percent of GDP, as global oil prices will likely remain high in 2022 and into 2023. The war could reduce income growth in South Asia this year by 2.2 percentage points: 1.3 percentage points because of slower GDP growth and 0.9 percentage points because of terms-or-trade losses. By end-2022, real export and import growth are expected to slow, as demand at home and abroad softens due to higher prices.

Figure 2.3. Current account balances will worsen in 2022 amid terms of trade losses



Source: World Bank MPOs, staff calculations.
Note: Terms of trade changes capture changes solely due to the effects of the war in Ukraine on fuel prices, comparing 2022 forecasts with and without the war. The current account balance for the region is converted to the calendar year. Afghanistan is excluded from the calculations. 2023 current account balance excludes Sri Lanka.

Current account deficits will move differently across countries (Figure 2.3). The war in Ukraine will impact demand for exports; South Asia exports about 25 percent of its products (including textiles and garments) to Europe, where demand growth is expected to slow, though there could be some trade diversion towards East Asia. Exports of services are expected to recover in most countries, including the recovery in tourism which will be crucial for Maldives, in particular. There are some differences across countries: in India and Pakistan, macroeconomic adjustment measures and the weaker currency in tandem with high commodity prices are expected to help tame imports in the second half of 2022 amid very fast transmission of elevated input prices to domestic consumer prices. There is much uncertainty about the outlook for Sri Lanka, as even the tourism outlook has deteriorated. If the country can muddle through by 2022 and assuming the external financing gap will be closed, the current account balance deficit in 2022 is expected to increase compared to 2021: the abrupt switch to a floating exchange rate regime in March could help increase competitiveness. Bangladesh should continue to see buoyant growth of garment exports by 2023. Moreover, higher remittances will offset higher import bills in Bangladesh and Nepal as higher oil prices underpin demand for migrant workers in Gulf Cooperation Council (GCC) countries.

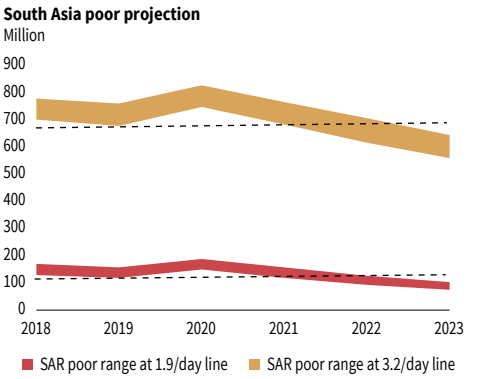
Fiscal policy will switch towards public investment and away from current spending over the forecast period. As relief efforts are unwinding, governments turn their focus to long-term growth bottlenecks. Alleviation of these bottlenecks requires investments in infrastructure and capacity expansions in the health and education sectors. This shift toward public investment is most prominent in India's recent budget, coupled with emphasis on gradual fiscal consolidation. While some cash transfers set up during the pandemic can wind down, these programs leave behind a positive legacy of a broader and more efficient social safety net that can be used when needed. Apart from specific support measures, there is no scope for broad-based fiscal stimulus. Several countries, especially Sri Lanka and Afghanistan, have no borrowing capacity, while others, for example Maldives and Pakistan, need to carefully watch their fiscal balance amid rising external debt vulnerabilities and domestic debt vulnerabilities in the case of Pakistan. But even countries with available fiscal space should be careful with using such space. Supply disruptions caused by the pandemic and high energy prices have pushed prices up. General demand stimulus would only increase prices further.

Poverty rates for the region are expected to recover in line with growth recovery and a resumption of contact-intensive services. Using the poverty line measure of $3.20 a day, the number of poor is forecast to range somewhere between 615 million and 704 million in 2022,[3] which means there will be fewer poor compared to before the pandemic (Figure

3 The latest official data for estimating poverty in India date to 2011/12, so the range represents upper and lower bounds. Afghanistan is not included in the measure; thus, the number of poor is adjusted with the rest of the region's poverty rate and Afghanistan's population projection.

2.4). Poverty in the region will continue to decline in 2023. The decline in poverty is also evident if measured using the $1.90 a day international poverty line for low-income countries. The most drastic exception is Afghanistan: though recent indicators of monetary poverty are not available, a recent survey in Kabul showed that 70 percent of households report insufficient incomes to meet basic food and non-food needs, compared to about 35 percent reported in May 2021. Extreme poverty has led to the widespread adoption of coping mechanisms such as reducing food consumption, borrowing at high interest rates and the sale or consumption of assets which could perpetuate poverty cycles in the long term (World Bank Group 2022). The poverty rate in Sri Lanka will increase: using the $3.20 international poverty line metric, poverty in Sri Lanka will rise to 11 percent in 2022 compared to 10 percent in 2019 amid import compression and investor uncertainty due to high debt levels.

Figure 2.4. South Asia's projected poverty level in 2022 falls below the 2019 level

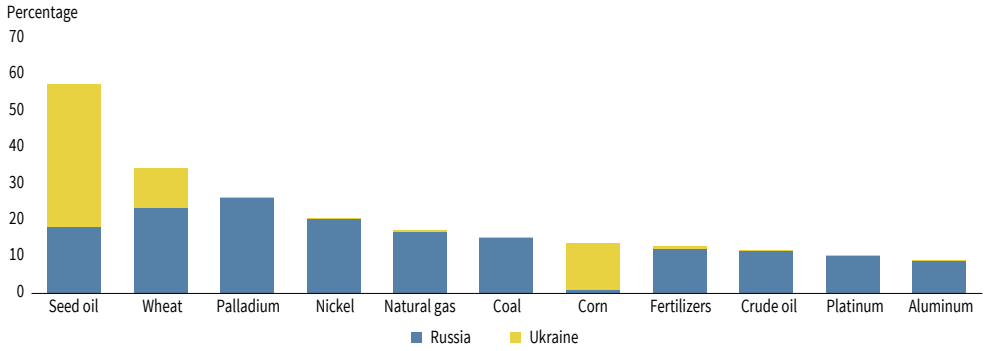


Source: World Bank MPO, Poverty Global Practice.
Note: Dotted line refers to lower bound of number of poor in 2019.

There is also a risk that poverty rates will not recover due to food insecurity if agricultural production yields are hampered by global fertilized prices. Russia and Ukraine are major producers and exporters of wheat and meslin (24 percent and 10 percent of globally traded amounts respectively, see Figure 2.5). Together, they export over 57 percent of seed oil. Wheat is not a major staple in South Asia (though it is increasingly so in some higher-income urban areas), but the substitution effect could exert further upward pressure on other staple grains such as rice.[4] The greatest concern over the forecast period, not just for South Asia but globally, will be the impact on the price of fertilizer (since Russia accounts for a sixth of global fertilizer exports). In response to high prices, farmers may choose to save on fertilizer inputs, which could affect the yield of all crops in the next planting season, further increasing food insecurity. This could be further exacerbated by the higher probability of weather-related crop damage due to climate change. Therefore, food inflation could stay high well into 2023, raising urban poverty. If governments react by restricting food exports as they did in 2008 and the early months of the pandemic, such hoarding will raise international prices further (Mitchell et al. 2022).

4 Ukrainian planting for the autumn harvest is reported to have been disrupted and its government has forbidden many food exports (including wheat). India may benefit in 2022 from higher prices for its wheat exports.

Figure 2.5. Russia and Ukraine's commodity exports in percent of global exports



Source: Comtrade, BACI.

2.2 Risks to the forecast center around price impacts

Risks to the forecast are considerable, as high commodity prices could persist. The war in Ukraine and related sanctions on Russia will continue to shake commodity prices and global financial markets for most of 2022. The baseline assumption is that Brent crude oil prices will average $95.10/bl in 2022 (compared to $70.44 in 2021), and then revert to $85/bl in 2023 and $80/bl in 2024. Agricultural commodity prices will rise by 11 percent but revert close to 2021 levels in 2023; and metals & minerals prices will rise by 17 percent and revert only slightly thereafter. But the outcome and effects of the war are extremely uncertain, so that commodity prices could be significantly higher. The forecast does not account for the impact of increased financial market volatility, which could further impinge on investment behavior, as will be discussed in section 2.2.3.

Moreover, a sudden and large tightening of advanced economy monetary policy could complicate the task of South Asia policymakers to gradually unwind accommodative monetary policy implemented during COVID. Inflationary pressures in Advanced Economies (AE) could get out of control amid pent-up demand for services, cost-push inflation due to supply-chain bottlenecks, and higher fuel prices. With the US labor market close to full employment and still very low interest rates, the US itself may soon be struggling to quell unanchored inflationary expectations at home. The job of central banks in emerging markets becomes more complicated because inflationary pressures are coming from so many directions. Though real interest rates are at historically low levels--so there is scope for raising nominal interest rates--tightening prematurely could stifle the post-COVID recovery. Emerging markets, including those in South Asia, may be forced to quickly react to AE tightening.

An exercise of three illustrative scenarios is performed using the World Bank's Macro-Fiscal Model (MFMod). Table 2.3 describes the scenarios, interpreted as deviations from the baseline

Table 2.3. Assumptions of risk and alternative scenarios

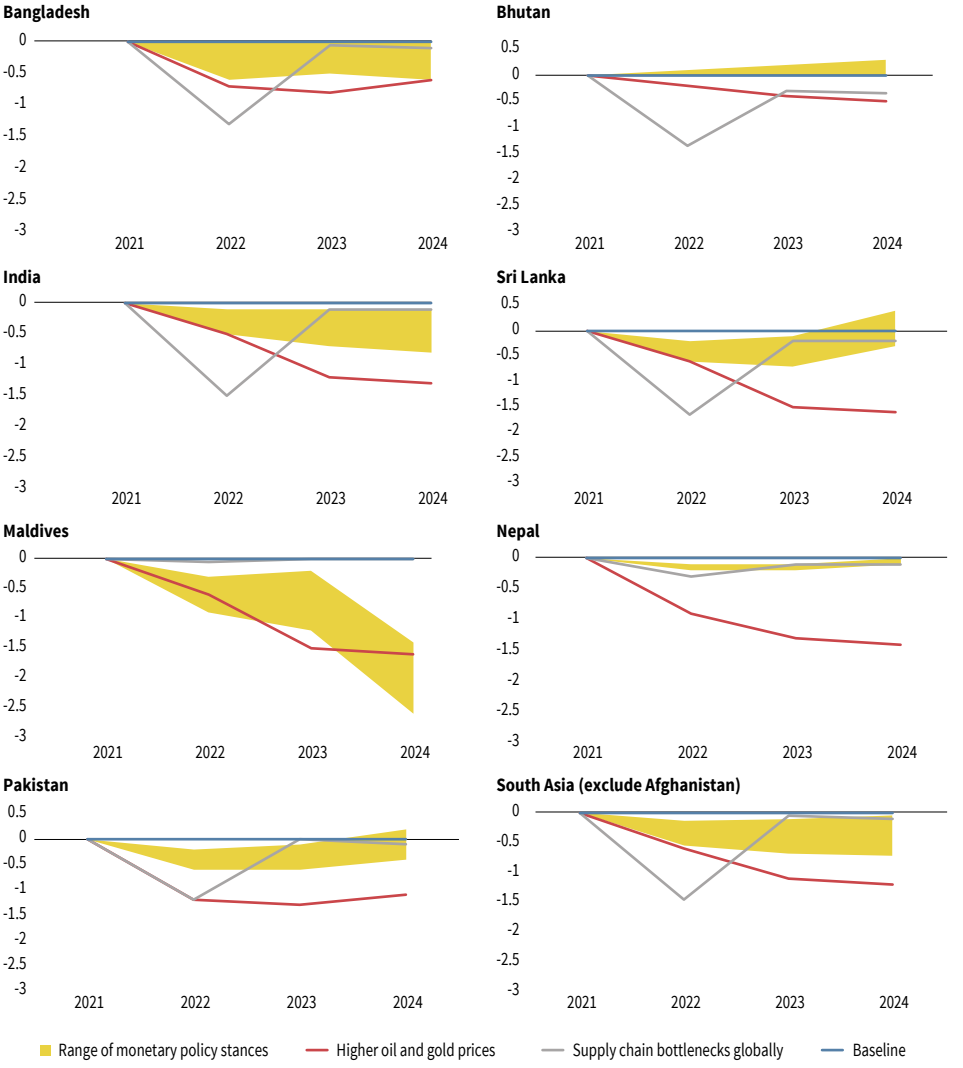
	Scenario	Description	Assumption behind scenario relative to baseline forecasts
1	Prolonged energy crisis: supply shock	Tensions between Russia and Ukraine and the ensuing sanctions raise oil and natural gas prices further, and--through substitution--coal and metals prices. South Asia mostly affected through higher import prices and fuel inflation.	Oil prices remain at $120/barrel through end-2022 and remain 24 percent above baseline through 2024. Natural gas increases by the same percent, and coal by 60% of that (due to substitution effects). Gold prices also rise in line with oil. Authorities raise policy rates further in response to fuel inflation dampening public and private investment.
2	Supply-chain disruptions continue into 2022	Uneven COVID recovery rates around the globe and uncertainty about markets keep semiconductor and chip production limited through 2022, while geopolitical tensions further delay global shipping. South Asia manufacturing imports and exports suffer as a result.	Trade in intermediate and final goods, and investment in manufacturing sector 20 percent lower than baseline in 2022 and 4 percent lower compared to baseline in 2023. Supply chain bottlenecks lead to goods' export and import shortages (volumes down by 16 percent) and prices up by 4 percent.
3a	The dilemma of premature monetary policy tightening: advanced economy (AE) inflation continues to rise leading to sharper than expected AE monetary policy tightening. In response, US and UK real interest rates rise by 1 percent, EMU and Japan real rates rise by 0.5 percent in 2022 and 2023.	To reduce the inflation pass-through coming from imports, all South Asian countries tighten policy rates, so real interest rate spread differential between domestic and external rate rises by 200 basis points.	The cost of capital rises and credit tightens. Ensuing currency appreciation against the US dollar reduces debt servicing costs for dollar-denominated external debt and reduces export competitiveness.
3b		Monetary authorities in the region choose not to tighten more than at baseline to fend off possible short-term capital inflows. Inflation rises above baseline.	Higher import prices raise inflation 2-3 percentage points above baseline and thus dampened credit and consumption in 2023.

forecast summarized in Table 2.1. The results discuss the impact on the region, though the magnitude and direction of the impact depends on each country's openness and exchange rate regime, among other things.

2.2.1 Higher oil prices

Oil price spikes could be much higher than envisioned in the baseline. A first scenario assumes that oil prices are 24 percent higher than baseline, at $120/barrel in 2022—a 70 percent increase over 2021—and the level remains above the baseline until 2024. This will impact South Asia's growth through the export demand channels and lower import demand in response to higher commodity prices. Inflationary effects via price

Figure 2.6. External developments could slow growth and reduce output compared with the baseline (percent change in GDP vs. baseline)



Source: Authors' calculations based on MFMod simulation output.

pass-through also affect consumption through an additional erosion of the purchasing power of consumers. The red line in Figure 2.6 shows the percent change in GDP compared to the baseline, which reflects the direct, first-round impact of the shock on growth and the second-round impact coming from the lower growth of trading partners due to the 24-percent oil price increase. Countries with a high fuel import share of GDP such as Maldives, Nepal and Sri Lanka will see a large first-order impact even assuming no effect

on trading partner growth.[5] For the region, GDP would be 1.1 percent lower than baseline by 2023.

2.2.2 Additional supply-chain bottlenecks

A second scenario assumes that supply chains will continue to suffer heavy disruptions through 2022, abetted by the war in Ukraine, raising cost-push inflation in the last six months of 2022. The outlook for global trade and value chains was already clouded, due to the start-stop impact of successive COVID waves in different parts of the world, such as a late Omicron surge in major Chinese cities and Hong Kong early in 2022 (Section 1.3). This could worsen for various reasons. First, Russia is a large exporter of industrial metals like palladium, used in automobile production, and nickel, used in the steel sector. Sanctions will further interrupt global value chains in manufacturing, even though South Asia imports most machines and electronics from East Asia and the Middle East. Second, the rerouting of global shipping amid trade diversion and closures of the Black Sea ports adds to logistical challenges and could lead to higher global shipping costs.

The impact on GDP is large for most countries but short-lived. Growth would be lower, mainly through the investment channel. Most countries are not large importers of intermediate products, as the manufacturing sector in the region is less than 15 percent of GDP, so the effect through imports would be small and reflected in lower imports of intermediate goods and durable goods in 2022. Export growth would be affected the most, especially in Sri Lanka, Pakistan, India, and Bangladesh, which have the largest share of exports of manufacturing goods. Almost 60 percent of the region's export value in 2020 in those countries comprised manufacturing goods. Services exporters such as Maldives, and to a lesser extent Nepal and Bhutan, would see a very small impact on growth. For the region, real GDP would be 1.4 percent lower than baseline in 2022 but will mostly recover in 2023 as global supply bottlenecks fade (Ha et al. 2022).

2.2.3 Response to tighter monetary policy in AE

If advanced economies' (AE) inflation continues to rise, leading to sharper than expected AE monetary policy tightening, central banks in South Asia will have two choices: either follow suit to stem inflationary pressure from import prices, or maintain the same, more gradual stance as in the baseline. For example, the Reserve Bank of India so far has undertaken steps toward gradual policy normalization by pausing the government securities acquisition

5 Bhutan receives fuel under a fixed contract price with India so growth would only be affected by the indirect effect through trading partner-growth.

program. A sudden and unexpected increase in policy rates in AE could create the dilemma of whether more tightening is prudent to avoid unhinging inflationary expectations.[6]

- **If the monetary authorities in all the countries chose to tighten further in response to AEs, the region's GDP would be 0.5 percent lower than baseline in 2022 and 0.7 percent lower than baseline in 2023.** Figure 2.6 shows the yellow range of GDP difference relative to baseline, where the lower part of the range assumes the region increases interest rates 200 basis points above AE real interest rates (Table 2.3 scenario 3a). In this scenario, tighter credit amid higher borrowing costs would lead to lower consumption compared to the baseline (by about 0.3 percent). Investment would also fall, partly because of the higher cost of funds (by about 0.5 percent). The biggest negative effect compared to baseline would be on exports, and this would persist until 2024. The appreciation of the real exchange rate that ensues from tightening would make South Asia exports less competitive.
- **To preserve the growth momentum, the alternative for South Asia as a region would be to not react to AE tightening (Table 2.3, scenario 3b).** This will lead to higher inflation compared to scenario 3a. Even then, there would be a small negative effect on growth relative to the baseline in 2022, mainly through the pass-through of higher import prices reducing the purchasing power of domestic demand. But assuming import prices raise inflation enough to cause a real depreciation of the currency relative to baseline, more competitive exports offset some of the growth declines that may come from higher import prices.[7] The risk of central banks following such a strategy is that inflationary expectations could get out of hand amid imported inflation, though that depends on individual circumstances. However, since about half of South Asia's consumer basket is comprised of food and fuel, commodity prices have a bigger, more long-lasting effect on the purchasing power than the pass-through from non-fuel imports.

There are important differences in the size of the impact across countries. The effect on Bhutan and Nepal would be small because their currency is pegged to the Indian rupee, much of their trade is with India, and because of low levels of financial intermediation. They cannot effectively use domestic monetary policy, given their exchange rate anchor, so the monetary policy stance should be the same as India's. At the other end of the spectrum, Maldives' currency is pegged to the US dollar and is an open economy, so tightening would

6 Tightening in the MFMod is modelled as an increase in the real interest rate. The baseline already assumes normal tightening, in other words, a policy stance consistent with baseline inflation. The assumption is also that AE's sudden tightening has a delayed effect on inflation of between 1-2 years.

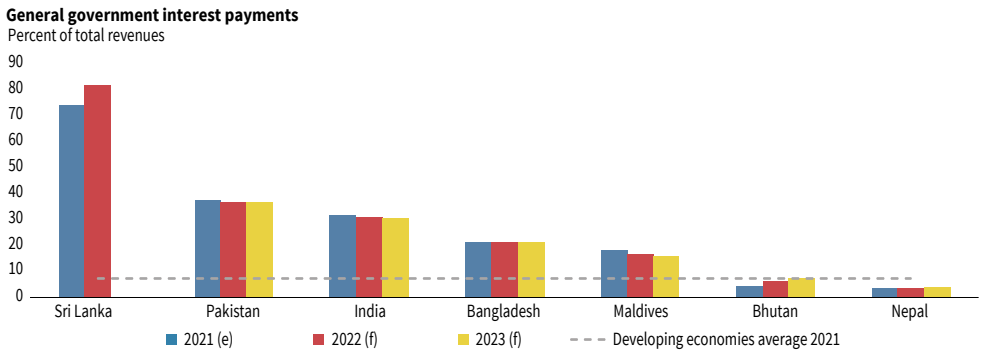
7 If inflation increases while the currency depreciates, how the real effective exchange rate moves will ultimately depend on which of the two effects dominates. In this simulation, it is assumed that the pass-through from import prices to consumer price inflation is weak (as shown in Figure 1.13 for Brent crude imports), leading to a real depreciation.

require it to adjust by reducing demand, which would lower GDP by over 2 percent relative to baseline in 2024. Such a policy would thus not be warranted. Bangladesh, India, Sri Lanka,[8] and Pakistan's GDP in scenario 3b would be around 0.5 percent higher if they choose not to tighten (scenario 3b), as compared to tightening (3b), in large part because the real depreciation would improve their export competitiveness. These decisions would be made in conjunction with the normal policy response to domestic inflationary pressures. The risk is that scenario 3a could lead to inflation staying above targets for a long time. Therefore, the decision will also be affected by the external environment and the fiscal situation.

2.2.4 Tighter external financing conditions

Given the war in Ukraine, the region is now more vulnerable to risks from the volatile external environment. If, as in scenario 3a in Table 2.3 (above), central banks in the region tighten monetary policy in response to monetary tightening in AEs, this could also threaten the solvency of firms, financial institutions, and governments in economies that have benefited from short-term financing at low interest rates globally (World Bank 2022b). This will lead to higher refinancing costs in the future, with significant fiscal implications. Interest payments already account for more than one-quarter of government revenues in India, more than one-third in Pakistan, and almost three-quarters in Sri Lanka (Figure 2.7).

Figure 2.7. Interest payments comprise more than one-quarter of government revenues on average



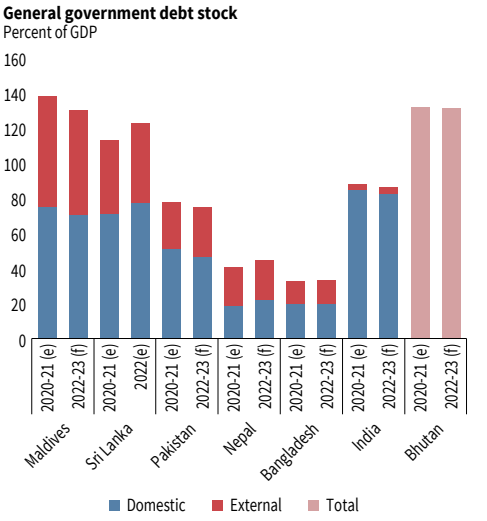
Source: World Bank Macro Poverty Outlook, staff calculations.
Note: (e)=estimate, (f)=forecast. No 2023 forecasts have been produced for Sri Lanka. Values for India are in the respective fiscal years.

Rising interest rates in AE could lead to capital outflows, putting pressure on the currencies in countries grappling with high external indebtedness. This is of particular concern

8 The simulation does not consider the uncertainty surrounding the Sri Lankan economy at the time of writing.

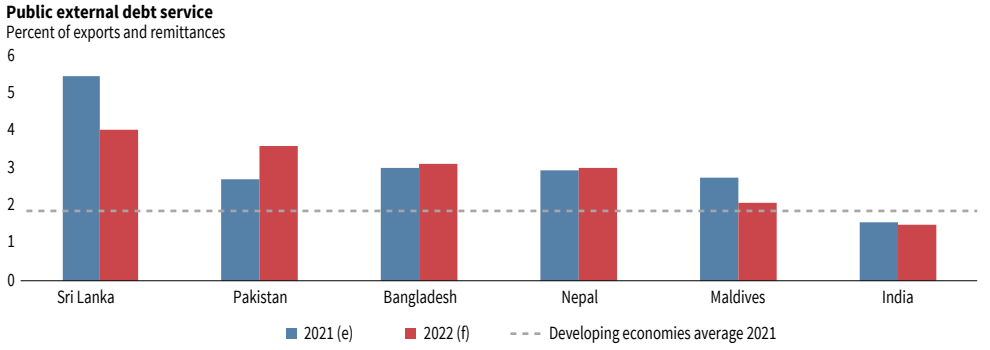
in countries with high levels of foreign currency-denominated debt, such as Sri Lanka, Pakistan, and Maldives. They are thus more exposed to swings in the risk appetite of foreign investors amid higher geopolitical uncertainty (World Bank 2022a). Public external debt as a share of GDP is particularly high in Maldives and Sri Lanka (Figure 2.8). Downside risks to tourism revenue related to the Russia-Ukraine war and new waves of COVID-19, as well as further increases in global energy prices, could exacerbate external vulnerabilities in Maldives. Indicators of ability to pay, such as the ratio of public external debt service to exports and remittances, is highest in Pakistan and Sri Lanka (Figure 2.9).[9] The situation is especially worrisome in Sri Lanka, where heightened fiscal and external risks led to a series of sovereign credit rating downgrades, preventing market-based refinancing.

Figure 2.8. External debts in the region are particularly high in Maldives and Sri Lanka...



Source: Macro Poverty Outlook.
Note: (e)=estimate, (f)=forecast. Bhutan's external debt is with India, which by contract is covered by revenues from hydropower exports to India, thus offsetting the financing needs and almost eliminating exchange rate risk and government indebtedness risks. Values are averages over calendar years, except for India where they are in the respective fiscal years.

Figure 2.9. ...with indicators of ability to pay deteriorating in Pakistan and unsustainable in Sri Lanka

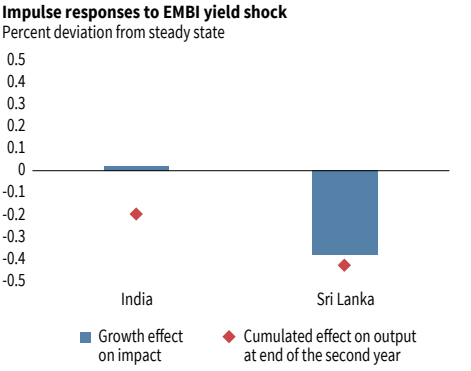


Source: World Bank Macro Poverty Outlook, staff calculations.
Note: (e)=estimate, (f)=forecast. Values for India are in the respective fiscal years.

9 The indicator is expressed as a share to exports, making it more robust in the presence of real exchange rate fluctuations (IMF 2000). Given the importance remittances have in regional balances of payments, their net inflows are added to the exports of goods and services.

For countries in the region with more exposure to global capital markets, tighter external financing conditions are likely to impinge on economic growth. The importance of the effects is larger for economies that are more exposed to capital flow volatility or those that have narrower policy space as proxied by current account balances and public debt levels. For example, using a sample of 18 emerging market economies (including India), Almansour et al. (2015) shows that a 100-basis point increase in the composite Emerging Market Bond Index (EMBI) yield (a risk premium shock) reduces average growth by a quarter percentage point on impact. Applying the same methodology to recent data from Sri Lanka shows that a risk premium shock of 100 basis points reduces Sri Lanka's growth by 0.38 percent within the same quarter, and the spillover remains negative and accumulates to more than 0.4 percent growth reduction at the end of the second year (Figure 2.10, Appendix A2.1). This is larger than the average effect obtained in the original study. Current circumstances in Sri Lanka are dire, however. The country is facing a balance-of-payments crisis and any increase in debt service would have stronger implications. The government has begun talks with the IMF on a possible loan program. The results for India, on the other hand, suggest a negligible response within the same quarter and a negative one-fifth percentage point cumulatively.

Figure 2.10. A risk premium shock reduces growth in Sri Lanka, with effects remaining negative even after two years



Source: Staff calculations based on Almansour et al. (2015).
Note: The shock represents a 100-basis point increase in a composite of emerging market global sovereign yields (J.P. Morgan Emerging Markets Bond Index), independent of growth developments in advanced economies or China. The model is estimated for the period 2011Q1-2019Q4 and is limited to India and Sri Lanka, due to data availability.

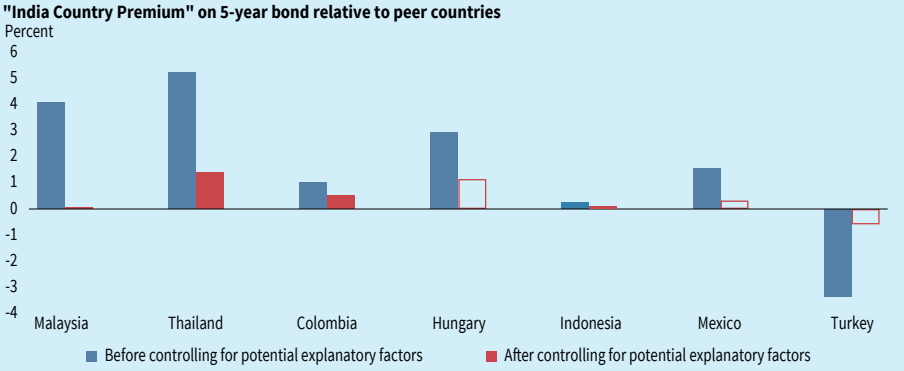
The spillover risks are palpable across the region. Further escalation of the war in Ukraine could scare investors in emerging market securities and debt instruments and lead to capital flight from emerging markets and developing economies (EMDEs), including South Asia, to "safe havens" in the West. Foreign investors have already been exiting India's financial market since October 2021, due to the impending monetary tightening by the US Federal Reserve. Recent developments in Eastern Europe have intensified the capital outflow, weakening the Indian rupee (INR). Maintaining macroeconomic stability through prudent and transparent policies will be important also if the Indian government turns to domestic borrowing. Box 2.1 explains why sound macroeconomic fundamentals and a liquid foreign currency market backed up by ample foreign reserves, are key ingredients in reducing sovereign bond yields, which are slightly higher in India relative to peer emerging markets.

Box 2.1. What determines domestic market yields?

Local currency borrowing provides a stable source of financing for emerging market sovereigns. A better understanding of sovereign bond yields' determinants can help lower the cost of borrowing. This is particularly important in light of a potential tightening in global liquidity conditions and capital outflows from EMDEs. Macroeconomic fundamentals and external conditions are important factors determining the relative borrowing cost across countries. More particularly, the expected monetary policy path, credit risk, inflation risk, exchange rate risk, as well as market structure factors, are possible drivers of a country's local currency sovereign yields.

To provide further insights and compare India's sovereign yields with the set of peer countries, this box relies on the analytical framework developed by Buzas et al. (2021). The applied methodology estimates panel regressions of a dependent variable (local-currency yield of five-year sovereign bonds) on explanatory variables with country- and time-fixed effects and clustered robust standard errors. Explanatory variables include macro-financial factors (monetary policy rate, real GDP growth rate, inflation expectations, fiscal balance, and current account balance), variables related to the liquidity and stability of the foreign exchange market (currency bid-ask spread and foreign reserve adequacy), and perceptions of political stability (the World Bank's score of political stability). The sample comprises seven EMDE countries between 2009Q1 and 2019Q2.

Figure 2.11. After controlling for macro-financial and foreign-currency market variables, the "India premium" narrows significantly



Source: Bloomberg, CEIC, World Bank FinStats, WDI, and staff calculations based on Buzas et al. (2021).
Note: Filled bars refer to values significant at the 10 percent level.

The results suggest that India has paid higher average yields on its local-currency sovereign bonds relative to most peers (Figure 2.11). The unconditional "India premium," that is, the excess yield on India's sovereign bonds without controlling for any explanatory variables, has been higher relative to peer emerging markets. After controlling for explanatory variables, however, the premium narrows and remains statistically significant in only two cases.

The findings provide suggestive empirical evidence of the importance of stable macroeconomic policies on local currency sovereign bond yields. Holding other things constant, a lower policy rate and an improvement in current account balances may help reduce the cost of sovereign borrowing. Similarly, an improvement in currency market liquidity and an increase in foreign reserve adequacy give the same outcome. Finally, a perception of higher political stability is also associated with lower yields. Higher political stability and a sustainable current account balance may indicate favorable debt service capacity, lowering risk perceptions of a country's foreign borrowing and the bond yield it pays. In this sample, real GDP growth, one-year-ahead inflation forecasts, and the fiscal balance are not found to be important determinants of sovereign borrowing yields. However, the explanatory variables considered in this exercise do not account for the entire "India premium," which remains significant in two cases, indicating that other factors may also play an important role in this regard. Policy reforms aimed at improving local-currency government bond market functioning could improve the efficiency of local-currency sovereign yields.

Elevated financial risks in one sector can spill over and destabilize the economy as a whole (World Bank 2022b). Financial sector balance sheets in South Asian economies featured significant risks even before COVID-19 outbreaks (Figure 1.21). Such balance sheet problems within state banks and corporates in India, for example, could worsen if the economy slows down, although profitability indicators have improved post-pandemic. The deepening foreign exchange crisis in Sri Lanka is putting a severe strain on its banking sector. In addition, low interest rates and supportive credit and fiscal measures have led to the rapid growth of private sector credit in the region (Figure 1.22). However, they could also lead to rapid deterioration of bank asset quality if lender screening is not adequate, adding to the financial sector risks. In some cases, like in Pakistan, the main banking sector predominantly lends to credit-worthy large conglomerates, but the balance sheets of microfinance banks could be more problematic (Section 1.3).

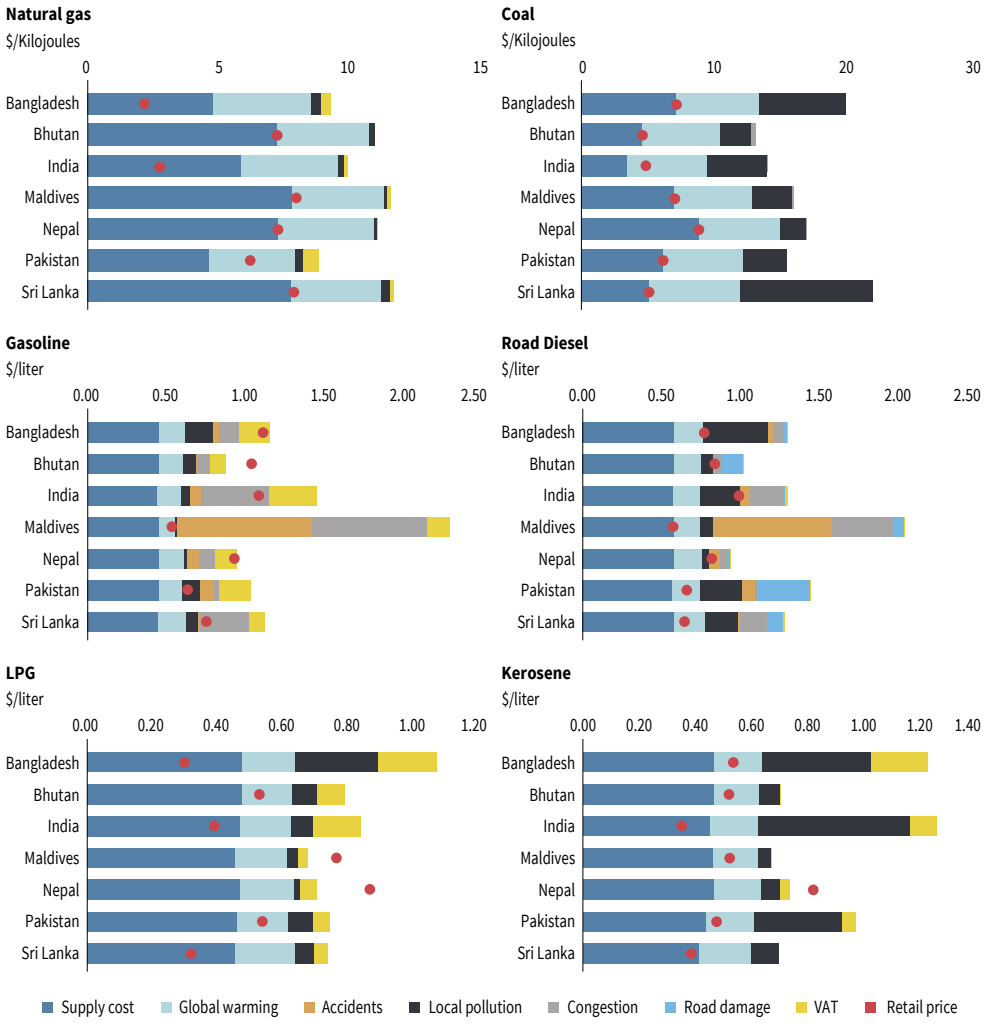
Financial institutions are likely to come under significant stress as debt moratoria and other support policies for borrowers are scaled back from levels during the pandemic. Eased lending conditions in the past two years have helped avoid a wave of loan defaults. But they have also masked the true extent of nonperforming loans and credit risks that could materialize once debt moratoria are lifted (Melecky 2021). Most programs in India have already ended without a rise in NPLs, although localized stress could emerge. In Bangladesh and Sri Lanka, such programs are still ongoing. The impact from the phase-out of the asset quality regulations will vary across countries: it will be larger in those with larger shares of loans under moratorium. The withdrawal of supportive policies, therefore, should be gradual, given that governments are often the lender of last resort and private sector debts can quickly become public debt if financial and economic stability is threatened.

2.3 Greening of taxation can reduce current problems and alleviate future bottlenecks

High and volatile oil prices have exposed South Asia's balance-of-payment vulnerabilities and fiscal challenges. Rising oil prices, further pushed up by the war in Ukraine, sharply increased the import bill for most countries in South Asia, which is posing new challenges to financing current account deficits. And as many governments in South Asia use subsidies to keep consumer energy prices low, rising oil prices in international markets impose further strain on fiscal balances. Moreover, volatility in international energy markets creates major uncertainties for policymakers, investors, and households. From a socioeconomic perspective, it is key to become less dependent on fossil fuels. This can be done by taxing, rather than subsidizing, carbon-intensive fossil fuels. Such taxation would provide incentives for higher energy efficiency and encourage the transition toward renewable energy. South Asia is a net energy importer but has considerable renewable energy potential, particularly India (IEA 2021, Box 2.2). Therefore, in addition to improving energy security, taxes on carbon-intensive fossil fuels could also support improvements in current account balances.

There is a strong case for including the negative externalities associated with the use of fossil fuels in retail energy prices. Reliance on carbon-intensive fossil fuels is also associated with environmental damages, which can have a negative impact on the economy. Local air pollution is one of the key negative side effects of fossil fuel combustion in South Asia. Additionally, the burning of fossil fuels contributes to climate change. Moreover, subsidized road fuels can worsen congestion, road damage, and accidents, due to higher driving rates. From an economic point of view, it would be optimal to internalize these negative externalities in the user prices of fossil fuels. Following Parry, Black, and Vernon (2021), Figure 2.12

Figure 2.12. In most cases, 2020 fossil fuel retail prices in the region are below their "optimal" externality-inclusive levels



Source: Authors' estimates based on data and methods in Parry, Black, and Vernon (2021).

shows what the socially optimal (or "efficient") price of different fossil fuels would be in the countries of South Asia. The optimal price of each fuel per unit of consumption is composed of: (i) supply costs,[10] (ii) global climate and local (outdoor) air pollution damages, and (iii) a

10 For non-tradeable fossil fuels (e.g., electricity), these consist of total production costs. For tradeable fossil fuels, these equal the opportunity cost of home consumption (as opposed to sale abroad) which is quantified via the import-export parity price (based on whether a country is a net importer or exporter of the fuel) and adjusted for home margins.

standard value-added/general consumption tax.[11] Currently, user prices in most South Asia countries are far below these optimal prices, in many cases not even covering supply costs because of direct subsidies. Especially in India, Bangladesh, and Sri Lanka, retail prices (for example, for natural gas and coal) are considerably below their optimal levels, while Nepal's prices (mainly LPG and kerosene) are generally closer to these levels.

Greening of taxation can provide much-needed fiscal space in South Asia. Taxation of negative environmental consequences, or in other words, the greening of taxation, can help raise significant government revenues and is an integral part of other green fiscal instruments such as green public infrastructure. This is particularly important given the region's high informality, which constraints revenue mobilization from standard tax instruments. The additional fiscal space will still require careful balancing of spending tradeoffs, but opportunities to use the additional revenues are abundant. Any additional revenues can be used for further development of social safety nets, infrastructure needed to support future growth, abatement measures to reduce air pollution, investments that make cities more livable, and measures that help adapt to climate change. All require substantial resources, especially the latter. According to the Global Climate Risk Index, which measures the extent to which countries have been affected by impacts of weather-related loss events (storms, floods, heat waves, etc.), 800 million people in South Asia live in climate hotspots, and most countries are ranked as the most vulnerable globally (Germanwatch 2021). Many places could suffer from melting glaciers (Nepal, Bhutan) or rising sea levels (Maldives, Sri Lanka, Bangladesh). Large segments of the population that are dependent on the agricultural sector will need to adapt and move more often, due to the changes brought on by climate change.

Despite their positive impacts, the implementation of green taxes can be challenging. First, if not properly structured, higher energy prices could erode the incomes of vulnerable households and, thus, popular support for green taxes. Moreover, the distributional impact of green taxes has to be carefully monitored and compensation measures should be put in place. Well-designed programs of targeted support to vulnerable households can be much more cost-effective than blunt energy subsidies, which tend to benefit richer households in absolute terms (Abdallah et al. 2015 and Coady et al. 2015). Second, less reliance on cheaper, more carbon-intensive inputs might give rise to (international) competitiveness concerns in the short run. However, in the longer run, when other countries impose carbon taxes on their imports, South Asia will benefit from having developed a comparative advantage in greener production. This could be enhanced through other instruments to encourage energy efficiency. Third, the energy transition toward renewables will lead to stranded assets in the fossil-fuel industry and a shift in job opportunities, both in terms of location and required skills. Nevertheless, in the long run, the renewable energy sector will lead to better jobs because it

11 See Parry, Black and Vernon (2021) for detailed definitions/explanations of these components.

tends to be more innovative (Box 2.2). There are few examples of green taxes in South Asia, but appetite for these types of taxes seems to be increasing.[12] An opinion survey of experts in the region showed that the overwhelming majority believe the implementation of a carbon tax would be a good idea (Figure 1.37). This might be because the pandemic brought home the realization that tail-end risks and large global shocks will happen more frequently and, hence, business-as-usual (BAU) activity is no longer warranted.

An analysis of a stylized carbon tax impacts could illustrate the advantages of green taxes. The forthcoming *World Bank-IMF Climate Policy Assessment Tool (CPAT)*[13] is used to simulate the impacts of a comprehensive carbon tax that from 2023 onward gradually increases to real 2021 $25 per ton of CO_2 equivalent in 2030 against a BAU scenario, assuming no new miti-gation policies.[14] This exercise is illustrative of the impact of a green tax, but both the size and the specific nature of the tax should not be considered policy recommendations.[15] Actually, a carbon tax might not be the first green tax that the region wants to consider and carbon taxes are more efficient if they are part of a global taxation of carbon. A few emerging markets (Argentina, Colombia, Chile, Mexico, and South Africa) have experimented with limited carbon taxes (less than $10 per ton of CO_2 as of 2019). Still, the simulation provides insights into how a region-wide change in taxes can trigger the required transition to renewable energies. The simulation also illustrates the positive side effects that might occur.

The positive impacts of reduced environmental externalities may outweigh the reduction the reductions in efficiency caused by the carbon tax (Figure 2.13). Net benefits are calculated as the difference between gross benefits and efficiency costs.[16] Gross benefits consist of the following: (i) global climate (the equivalent to "global warming" in Figure 2.12

12 For example, the "GST Compensation Cess" (formerly the "Clean Energy Cess"/ "Clean Environment Cess") in India imposes a modest tax on raw coal of roughly $3-4 per ton of CO_2 equivalent (see further discussion in Parry, Mylonas and Vernon (2019)).

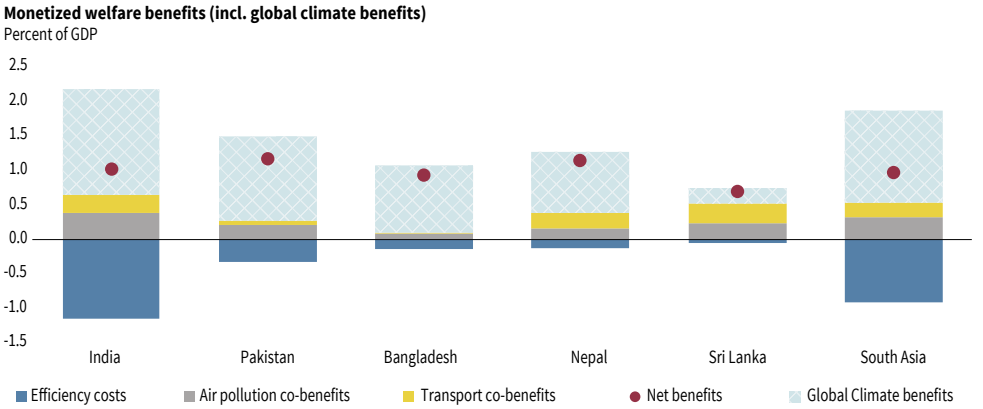
13 This excel-based tool, which allows simulations to be conducted on climate change policies for 150 countries under user-specified scenarios, will be publicly available at https://www.worldbank.org/en/programs/the-global-tax-program/knowledge-center. Previous iterations of the tool have been used, for example, here: https://www.financeministersforclimate.org/sites/cape/files/inline-files/IMF-WB%20Coalition%20Note%20-%20Implications%20of%20the%20Global%20Economic%20Crisis%20for%20Carbon%20Pricing.pdf

14 The carbon tax is assumed to: (i) apply to upstream fossil fuel suppliers; (ii) be levied on the carbon content of fossil fuels; and (iii) be imposed in addition to any pre-existing taxes on fossil fuels. Similar exercises have been carried out in the past for large emitters in IMF (2019b) and Parry, Mylonas and Vernon (2021), as well as across 135 economies in IMF (2019a) using a simplified version of a model predating CPAT.

15 The stylized scenario choice of a carbon tax amounting to $25 per ton of CO_2 equivalent in 2030 is based on the proposed minimum carbon price for developing economies in Parry, Black and Roaf (2021). See Appendix A.2.2 (Section A) for an overview of the model.

16 In theoretical terms, these efficiency costs represent the deadweight losses/Harberger's triangles from the imposition of the carbon tax, plus the rectangles representing the loss in consumer surplus from higher fuel prices. There is no loss in terms of producer surplus, due to assumed horizontal (i.e., perfectly elastic) supply curves. See Parry et al. (2014).

Figure 2.13. Net quantifiable benefits from phasing in a $25/ton of CO_2 carbon tax by 2030 are positive



Source: Authors' estimates using CPAT, based on the data and methods in Parry et al. (2014) and Parry and Small (2005).
Note: Economic costs are deadweight and consumer surplus losses from the carbon tax. Global climate (or "global warming") benefits are social benefits from emissions reductions following imposition of the carbon tax (valued at a social cost of carbon of real 2021 $47 per ton of CO_2 equivalent in 2019, rising at approximately a 4 percent annual rate to reach real 2021 $72 per ton CO_2 equivalent in 2030). The global tax benefits will, thus, accrue to countries outside the region.

above) benefits;[17] (ii) air pollution co-benefits (averted local air pollution mortality and morbidity due to lower $PM_{2.5}$ exposure); as well as (iii) transport co-benefits (averted road accidents, reduced road damage and reduced congestion as fewer passenger vehicles are on the road).[18] Specifically, India and Sri Lanka see important net benefits from less congestion and averting road accidents. In most cases, net benefits remain positive regardless of whether (global) climate benefits—which by definition also accrue to countries outside the region—are considered. The magnitude of global climate benefits provides evidence of the need for (and large payoffs from) global coordination when it comes to carbon taxes. In other words, the case for a carbon tax becomes stronger the more countries participate.

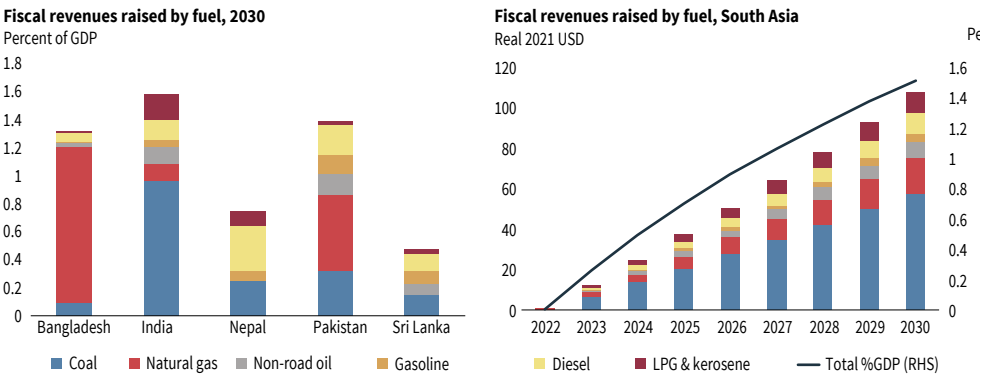
A carbon tax might cause far-reaching structural changes. In the process of pricing fossil fuels, households will have an incentive to move toward cleaner sources of fuel to save money, use public transportation that relies on less carbon-intensive fuels, and walk or use rickshaws on the margin. There will be greater incentives to build more pedestrian walkways and provide flexible work arrangements for those who can work for home, especially women. There may also be a greater demand for walkable green spaces in urban areas, and

17 These consist of the monetized social benefits from CO_2 emissions reductions under the simulated carbon tax, at a social cost of carbon of approximately real 2021 $47 per ton CO_2 equivalent in 2019, growing at approximately an annual rate of 4 percent to reach approximately real 2021 $72 per ton of CO_2 equivalent in 2030.
18 See Parry, Black and Vernon (2021), Parry, Mylonas and Vernon (2021), Parry et al. (2014) as well as Parry and Small (2005) for further information on the underlying definitions and calculations of the components shown in Figure 2.13.

lower traffic will reduce time spent commuting.[19] As a result, ambient pollution will decline, reducing average sick days for workers and increasing life expectancy and the ability for the average South Asian to contribute their full human capital to the economy.

The simulated carbon tax raises average fiscal revenues for the region by approximately 1.5 percent of GDP in 2030 (Figure 2.14), providing funds for compensating those affected or for easing the green transition. These revenues are independent of the monetized benefits shown in Figure 2.13. The (fuel) source of these revenues is strongly correlated with the main source and carbon intensity of fossil fuel consumption: for example, coal in India and natural gas in Bangladesh and Pakistan (see also Table A.2.1 in Appendix A.2.4). These revenues can be used in different ways, but a potential allocation would be to provide funds or services to vulnerable households, compensating them for higher energy costs and reducing inequality. This will likely be a key component of every compensation strategy because it can significantly increase buy-in from the population for the energy transition. The use (that is, the recycling) of resources from the carbon tax could vary. For example, resources could be used to strengthen social safety net systems that were scaled up during COVID, or for adaptation such as better insurance against weather-related disasters in rural areas, or for enabling greater/more efficient production of renewable energy.

Figure 2.14. Annual revenue gains from the $25/ton CO_2 carbon tax are substantial

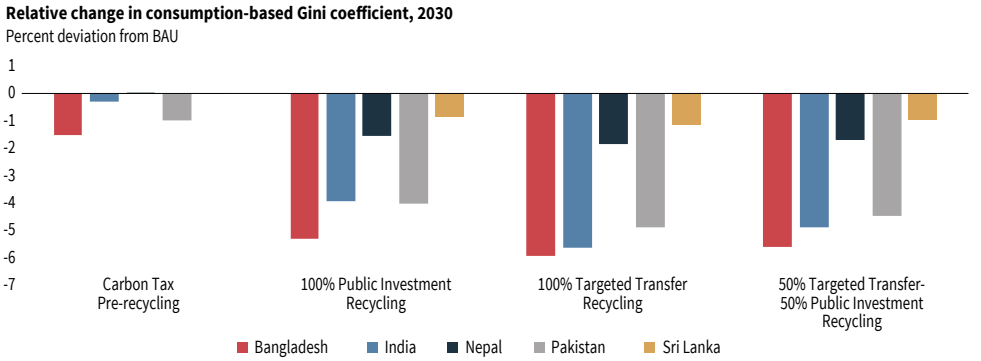


Source: Authors' estimates using CPAT.
Note: Shows total additional (above BAU) fiscal revenues from the policy net of renewable energy subsidies by source of fuel. See Appendix A.2.1 for assumptions.

19 Traffic congestion in Dhaka and Karachi resulting from bustling economic activity has depleted human capital through time lost in traffic for workers and absences due to airborne illnesses of urban and factory workers (Ali et al. 2014, ADB 2015). Though there are positive examples: plans to create urban green and walkable spaces such as Karachi's center town will help (Gopihan and Malkawi 2021).

Effectively recycling revenues from green taxation could help enhance equity and foster political acceptability of higher fossil fuel prices. Figure 2.15 shows the results from estimating the distributional impact of the simulated carbon tax, coupled with two basic (but different) revenue-recycling policies in 2030: (a) public investment in the form of infrastructure access provision, based on household access to the following infrastructure types: electricity, water, sanitation, Information and Communications Technology (ICT), and public transport; and (b) a targeted cash transfer to households in the bottom 70 percent of the consumption distribution.[20]

Figure 2.15. Inequality falls following recycling of the $25/ton CO_2 carbon tax revenues



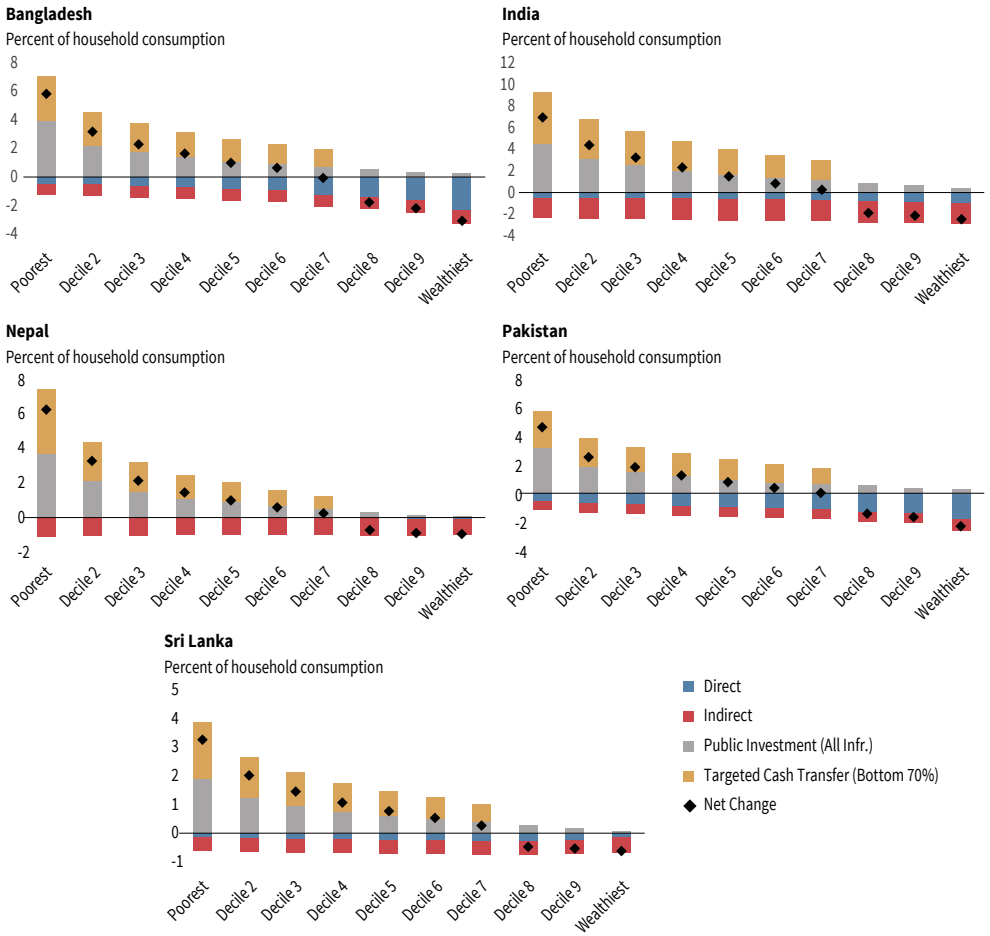
Source: Authors' estimates using CPAT.

Even without taking into account revenue recycling, income equality improves a small amount in some countries relative to BAU.[21] Figure 2.15 shows the percent change in the consumption-based Gini coefficient under four cases: (i) pre-recycling; (ii) assuming that all carbon tax revenues are allocated to infrastructure access provision (a); (iii) assuming that all carbon tax revenues are allocated to compensating the bottom 70 percent (b); and (iv) assuming that half the revenues are allocated to policy (a) and the other half to policy (b). India, Bangladesh, and Pakistan would see an important improvement in equality from such policies (almost 4-5 percent decline in the Gini).

20 Household-level information on access to the infrastructure types mentioned above is obtained directly from household budget surveys (see Appendix A.2.3 for data sources). The associated revenue-recycling policy is set up as follows: if, for example, the average infrastructure access rate of the poorest (e.g., bottom 10 percent) individuals is equal to 30 percent, carbon tax revenues are allocated to the remaining 70 percent of these individuals and so on for subsequent segments of the population.

21 This is the case not least because poorer households in the region are largely not connected to the electricity grid and consume biomass, which is not taxed under the simulated carbon tax. However, this effect could attenuate as incomes grow and poorer households become relatively more fossil-fuel-intense in their consumption (see further discussion in Parry, Mylonas and Vernon (2019)).

Figure 2.16. In 2030, the direct vs. indirect consumer surplus losses in each country represent a small portion of total household consumption and are mildly progressive



Source: Authors' estimates using CPAT.
Note: Individual country charts present the incidence effects from a $25/ton CO_2 carbon tax in 2030 by (population-weighted) per-capita household consumption decile. Positive (negative) values represent gains (losses) in percent of total household consumption. The "direct" effect is the loss in consumer surplus from price increases of fossil fuels (for example, electricity, gasoline/diesel, natural gas) following the introduction of a carbon tax. The "indirect" effect is the loss in consumer surplus from price increases of non-fossil fuel products (such as food, clothing, housing) following the introduction of a carbon tax. These charts also assume that all revenues raised from carbon taxation are equally split between public investment in infrastructure access and targeted cash transfers to households. All reported values represent population-weighted averages and are adjusted for behavioral responses. See Appendix A.2.3 for further information on data and methods.

The distributional impacts of carbon taxation (and any revenue recycling) depend on household spending patterns. The individual country charts in Figure 2.16 assume that 50 percent of the revenues raised are spent on infrastructure access and 50 percent are rebated to the bottom 70 percent of households via a targeted transfer (half of policy (a) and half of

policy (b) above).[22] Absent revenue recycling, consumer surplus losses from the introduction of the carbon tax are (mildly) progressively distributed across consumption deciles, mirroring the findings observed in terms of the Gini coefficient above[23]. On average, approximately 30-40 percent of the incidence is due to increases in the direct cost of energy for households (that is, the "direct" effect), while the rest is due to an increase in the prices of non-fuel goods and services that use (the now costlier) fossil fuels as an input into their production process (the "indirect" effect). Once revenue recycling is considered, the bottom seven consumption deciles receive gains ranging, on average, between approximately 1 (Sri Lanka) and 3 (India) percent of total household consumption.[24]

The greening of taxation requires careful planning and implementation. To reap the potential benefits from carbon taxation, broad consensus and integration into budget planning is required because new taxes must remain in place and not change following every political cycle. Moreover, accompanying measures are needed to smooth the transition process, as mentioned above. Additionally, although revenue mobilization capacity across the region is low, energy taxes should be generally easier to collect than many other taxes, since producers and distributors of energy are mostly large, formal, and sometimes state-owned companies. The phasing in of green taxes would ideally occur when global oil prices are falling, not rising.

Broad consensus on green policy can only be achieved with a gradual approach and thorough public debate. Even if there is disagreement about the optimal (or first-best) tax system, there might be agreement about the initial steps toward such a tax system. These steps could be in the form of the elimination (or at least reduction) of inefficient fuel subsidies, which still average 0.8 percent of GDP in South Asia but vary widely (from insignificant amounts in Bhutan and Nepal to 2.5 percent of GDP in Pakistan, see Appendix A.2.2). This also ensures that electricity companies are no longer loss-making and contingent liabilities are no longer being built up. Public debate about compensation measures and long-term objectives is also a key element of broad consensus that ensures that policies survive political cycles. For example, India's 2022-2023 budget, presented in early February, incorporated for the first time such a long-term strategy. Climate action was framed as one of the pillars of the budget, including plans for low-carbon and climate-resilient development (Jha 2021).

How quickly and easily green taxes can achieve the desired impact of encouraging a low-carbon development path depends on how the transition is managed with

22 See Figure Note and Appendix A.2.3 for further details.

23 Mean incidence effects across all consumption deciles range between roughly 0.5 (Sri Lanka) and 2.5 (India) percent of total household consumption.

24 This is mainly by design, given that the targeted cash transfer was assumed to apply only to the bottom 70 percent of the consumption distribution.

accompanying measures. The transition includes a shift in the structure and location of jobs and productive assets from "brown" to "green" firms. Box 2.2 analyzes the current job structure to understand how prepared South Asia is for a green transition in the energy sector. It finds that areas with more renewable potential are already using more renewable energy, and firms engaged in renewable energy are more likely to be in such areas. For workers in the energy sector, those in "green" jobs are more educated and earn more, suggesting that poor, lower-educated workers are likely to be adversely affected by the transition.

The transition should also deal with stranded assets. For example, it may become unprofitable to mine coal, affecting the livelihoods of people and communities in mining regions. As the cost of producing renewable energy continues to drop, the assets of fossil-fuel companies will become obsolete much faster. This risk of stranded assets also extends to financial institutions that are involved in financing highly carbon-intensive industries.

Energy transition is easier when there is coordination across borders. Such coordination can prevent sudden changes in comparative advantage and provide, through trade, quicker access to renewable energy like hydropower. Coordination can take the form of imposing the same taxes on imports as on domestic production. One example is the EU's adoption of mitigation policies that will impact trade, though the immediate effect on South Asia is still very small. The Carbon Border Adjustment Mechanism (CBAM) adopted by the EU is a tax on the carbon content of imports and is scheduled to take effect in January 2023. Currently, the list of goods subject to this special fee is limited, and only about 8.8 percent of the region's exports of goods will be subject to CBAM (Table 2.4). The number is negligible for Bhutan, Pakistan, and Sri Lanka. Maldives and Bangladesh do not export any goods to the EU that would be subject to CBAM. However, the EU is likely to widen the list of goods subject to CBAM, so the region should be prepared to compete by offering increasingly greener exports. South Asia itself could impose similar import tariffs.

Table 2.4. Few exports to the EU from the region will be subject to CBAM

CBAM sector		Sub-sector	South Asia share of exports to the EU in percent 1/				
			India	Nepal	Pakistan	Sri Lanka	South Asia
Aluminium	76	Aluminium and articles thereof	1.05	0.01	0.04	0.05	0.87
Cement	25	Salt, sulphur, earths, stone	0.25	0.00	0.47	0.07	0.27
Fertilisers	28	Inorganic chemicals	0.36	---	0.01	0.00	0.30
	31	Fertilisers	0.01	---	---	---	0.01
Iron and Steel	72	Iron and steel	5.60	---	0.01	0.00	4.64
	73	Iron or steel articles	3.22	0.01	0.08	0.08	2.68
Grand total			10.49	0.02	0.61	0.21	8.78

Source: Authors' estimates based on WITS data.
Note: 1/SAR' exports of each product as a total share of exports to the EU.

Box 2.2. How prepared are South Asia's energy firms and workers for the green transition?

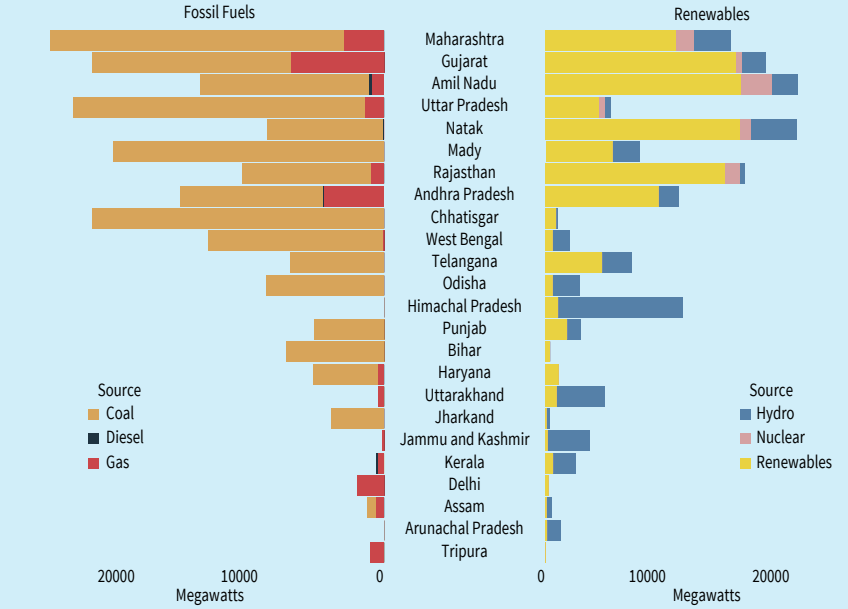
Leading South Asia's energy sector toward less carbon dependence presents challenges and opportunities, so it is important to assess the region's preparedness for this transition. One of the challenges in decarbonizing the energy sector is the labor market. Firms may diversify or new firms in renewable energy may enter the market. Current workers need to be retrained for new positions and future workers would need appropriate training to meet future labor demand. Additionally, there can be geographic differences between where current and future jobs are, which may push workers to migrate, even internally within a country. The effects of the green transition could go beyond energy production, but the labor market in energy production provides an illustration of this phenomenon.

Energy production remains reliant on fossil fuels in the region, and there is considerable geographical variation in terms of diversification into renewable energy use. The main coal-producing region in South Asia is in central India, including the states of West Bengal, Jharkhand, and Chhattisgarh. Renewable energy potential is also regional, with wind and solar potential highest along the coast in western India, and hydropower potential highest in the Himalayas. Rooftop solar, the most labor-intensive form of renewable energy, is concentrated in urban areas. In addition, offshore wind has tremendous potential that has not yet been fully exploited. Some of this geographic discrepancy is evident in power generation statistics from India, as illustrated in Figure 2.17. States within the coal-producing region are still dependent almost entirely on coal for power, while other states have diversified their power generation into the renewable sector. The location of firm headquarters is consistent with the geographical distribution of the region's renewable energy potential (Figure 2.18). Similarly, workers in coal mining are in coal-producing states, while other workers in the energy sector are more dispersed geographically.

Workers in the energy sector who have "green" jobs tend to be more well-educated, which is good news for the energy transition, though lower educated, low-wage workers are less likely to have a "green" job. Using a task similarity indicator, which provides a probabilistic measure of the "greenness" of an occupation,[25] the labor force

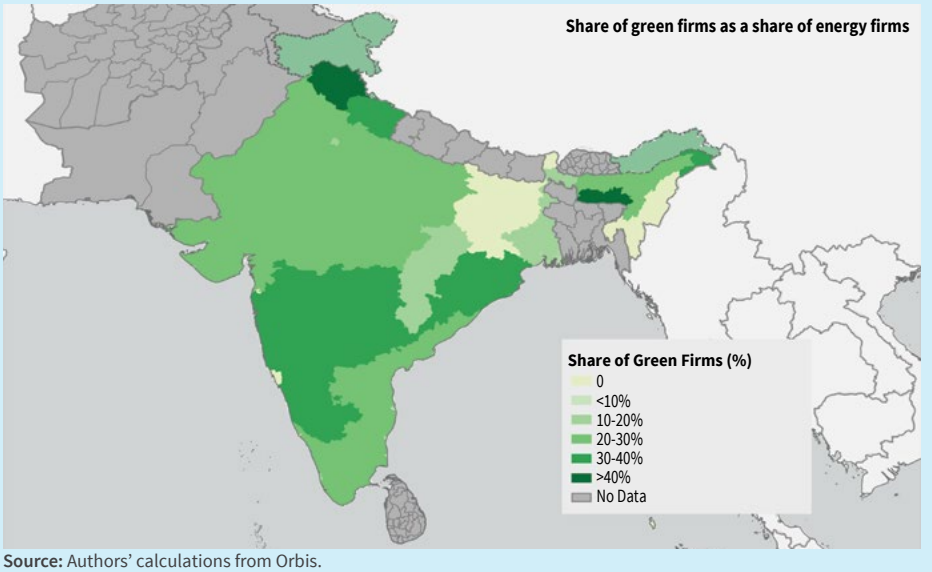
25 To assess the labor market's preparedness for the green transition, the tasks associated with occupations in the energy sector are compared to the tasks of occupations that have been classified as "green" in the ONet Resource Center. Further details are available in a forthcoming working paper (Li and Triyana 2022).

Figure 2.17. Power generation by type and state in India, December 2021



Source: National Power Portal, India.
Note: For states with at least 100MW in power generation.

Figure 2.18. Location of energy firms in India

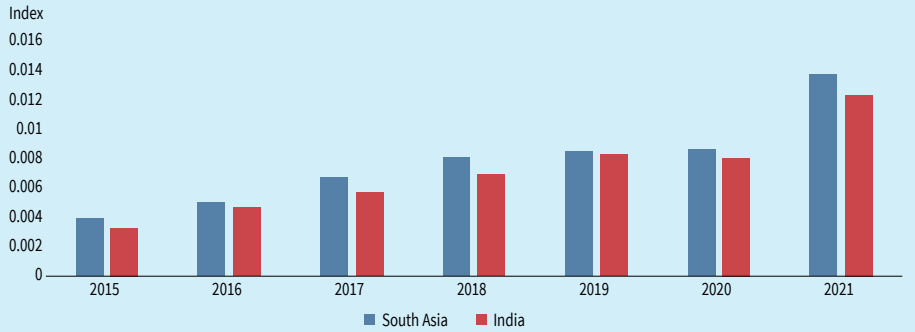


Source: Authors' calculations from Orbis.
Note: Sample restricted to firms in coal mining, coal mining support, energy generation, and transmission. The green firm indicator takes the value one if the energy firm's textual description includes terms like "solar," "wind," and "renewable."

survey from India and Pakistan shows that workers with "green" jobs in the energy sector are more educated, earn more, and engage in higher-skilled occupations. As the green transition progresses, less educated, low-wage workers, such as those in coal mining are more likely to face challenges. As with any transition, special compensation and training schemes could be considered for those who lose.

Demand for green skills in the energy sector has grown. To further examine skill demand in the energy sector, more granular data on job characteristics from LinkedIn are used. The skill penetration index, which measures the time trend of skills within an industry, shows that the region's energy and mining sector has incorporated more green skills, and a similar trend is observed individually for India (Figure 2.19). Similarly, the hiring of workers with green skills has grown since 2015. The pandemic may have accelerated the growth of demand for green skills in the energy sector, providing an opportunity for the green transition.

Figure 2.19. Green skill penetration in the energy and mining sector



Source: LinkedIn skill penetration index.
Note: The index measures the time trend of a skill across all occupations within an industry, based on the methodology developed by Zhu et al. (2018).

In conclusion, mainstreaming climate change into macro-financial policies that foster sustainable growth will require more attention to structural changes and distributional issues. The traditional macroeconomic objectives of price stability, robust external and fiscal balances, and a sustainable economic growth plan are still equally important, but their design should reinforce the path towards a greener development model. The findings from this exercise reinforce the notion that pricing carbon is good for the region's development even if South Asia is not a major global greenhouse gas emitter in per-capita terms.[26] Adaptation

26 Though, as a region, it accounts for 7.8 percent of total global greenhouse gas (GHG) emissions.

will be necessary for the region, but mitigation can catalyze successful green development. Although many developing countries were reluctant to unilaterally commit to mitigation targets because the perception was that this would stifle their development, the effects of climate change and innovation in green technology stand to alter this trade-off. South Asia does not have to reduce energy consumption—which is required for economic development—but can reduce the carbon content of that energy consumption as it transitions to renewables. The policy discussion should shift to how (as opposed to *whether*) to facilitate the transition to a green economy while minimizing associated short-term costs.[27]

27 A more thorough analysis of each of the available tools for countries in the region to mitigate climate change and adapt to its effects will be the subject of the forthcoming CCDRs, designed specifically "to tackle disconnects between climate and development policies, identify the highest-impact actions to reduce GHG emissions and build resilience" (World Bank Group 2021).

Appendixes

Appendix A.2.1 Methodology for estimating external spillovers in India and Sri Lanka

A model proposed by Almansour et al. (2015) is used to estimate the effects of a risk premium shock in India and Sri Lanka. The analysis relies on a Bayesian vector autoregression model with financial and real variables to quantify the impact of external shocks on growth in emerging markets. The model features an external and internal block and assumes that global economic conditions are exogenous to shocks to an emerging market contemporaneously. Within the external block, structural shocks are further identified using a recursive (Cholesky) scheme. Each economy's baseline model consists of the variables ordered as follows: US real GDP growth, Eurozone real GDP growth, China real GDP growth, Brent international oil prices, US inflation rate, US 10-year Treasury bond rate, the EMBI yield, the economy-specific terms-of-trade growth, domestic real GDP growth, domestic inflation rate, the rate of appreciation of the economy's real exchange rate vis-à-vis the US dollar, and the domestic monetary policy rate. The first eight variables constitute the external or foreign block, and the remaining variables make up the internal or domestic block. All variables enter the model with four lags. The model is estimated using the data from 2011Q1 to 2019Q4.

Appendix A.2.2 Overview of the Climate Policy Assessment Tool (CPAT)

The model provides country-specific projections of fossil fuel CO_2 emissions and assessments of the emissions, fiscal, economic, public health/other externalities and distributional impacts of carbon pricing and other mitigation policies for 150 countries. It decomposes fossil/other fuel use into the power, industrial, transport, and residential sectors, projecting it forward via: (i) GDP forecasts; (ii) assumptions about the income and own-price elasticity of demand for fuels; (iii) assumptions about the rate of technological change affecting energy efficiency; and iv) changes in international energy prices, with pre-existing fuel taxes/levies being held constant in real terms. The impacts of mitigation policies on fuel use and emissions depend on: (i) their effect on future energy prices; (ii) fuel switching within the power generation sector; and (iii) price elasticities of electricity/other fuel demand across sectors.

The tool is parameterized using 2019 fuel use and emissions factors by country/sector from the International Energy Agency (IEA). Data on energy taxes/subsidies and prices by product and country is obtained from the IMF.[28] Prices are projected forward using this data in tandem with an average of IEA, US Energy Information Administration (EIA), IMF World Economic Outlook (WEO), and World Bank forecasts of international energy prices.[29] Fuel price responsiveness is broadly consistent with empirical/energy model results. See Appendix III in IMF (2019a) for an analytical exposition of the model and its parameters.[30]

The analysis within CPAT is subject to some limitations and caveats.

First, the model does not explicitly incorporate gradual turnover of energy capital. This assumption limits the short-term responsiveness of fuel use to carbon pricing but is reasonable, given the focus on longer-term scenario simulations (for example, in 2030), which are assumed to be gradually introduced.

Second, CPAT abstracts from the possibility of additional mitigation actions (beyond those implicit in current country-level price data) in the business-as-usual (BAU) scenario. Specifically, the BAU scenario is used as a "benchmark" against which the performance of any modeled mitigation instruments is measured (a standard approach in the literature). On this note, capturing the full set of intricacies and tailored approaches of domestic mitigation policies is challenging and may require further modeling than what is currently available in CPAT.

Third, the fuel price response parameters in the model are plausible for small, incremental price changes. In other words, model elasticities may not apply under drastic price hikes that could cause major technological developments or non-linear adoption of technologies.

28 See, for example: https://www.imf.org/en/Topics/climate-change/energy-subsidies

29 The analysis presented in Section 2.3 does not incorporate the preliminary World Bank commodity price forecasts following the war in Ukraine, as these would be inconsistent with the price forecasts obtained from the other sources listed above. If said preliminary forecast were to be considered, 2030 CO_2 emissions under the $25 carbon tax would fall by 11.4 percent (as opposed to 11.7 percent) relative to BAU.

30 CPAT also uses multiple other data sources including: the Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE), Climate Watch, Copernicus Atmospheric Monitoring Service (CAMS), Enerdata, Global Burden of Disease (GBD 2019), Global Trade Analysis Project (GTAP), Institute for Health Metrics and Evaluation (IHME), International Institute for Applied Systems Analysis (IIASA's) GAINS model, International Labour Organization (ILO), Organisation for Economic Co-operation and Development (OECD), United Nations Framework Convention on Climate Change (UNFCCC), United States Department of Agriculture (USDA), World Bank Group Carbon Pricing Dashboard, World Health Organization (WHO), World Bank Development Indicators (WDI), World Road Statistics (WRS), World Resources Institute (WRI) CAIT.

Fourth, the model assumes flat (perfectly elastic) supply curves, an absence of general equilibrium effects, and no changes in international fuel prices that might result from multiple countries introducing mitigation policies at the same time. See also further discussion of these issues in IMF (2019b) and Parry, Mylonas, and Vernon (2021).

Appendix A.2.3 Data sources and methodology used to analyze the distributional consequences of carbon taxation in South Asia[31]

The burden on household consumption deciles d = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10} from higher end-user prices following the introduction of the $25 per ton CO_2 equivalent carbon tax is calculated as:

$$\text{(A)} \qquad \sum_g \pi_t^{dg} \cdot \rho_t^{dg}$$

where g stands for the main categories of goods/services consumed by households, π_t^{dg} is the share of decile d's total consumption spent on good/service g at time t, and ρ_t^{dg} is the relative price increase for good/service g caused by the carbon tax. For example, for a good with a budget share of 2 percent of total household consumption, expression (A) implies that a 5 percent increase in said good's price will reduce decile d's consumption by 0.1 percentage points.

Data on household budget shares is obtained from: (i) the 2016-2017 Household Income and Expenditure Survey (HIES) for Bangladesh;[32] (ii) the 68th Round of the National Sample Survey (NSS) for India;[33] (iii) the 2010-2011 Living Standards Survey (LSS) for Nepal;[34] (iv) the 2018-2019 Household Integrated Economic Survey (HIES) for Pakistan;[35] and (v) the 2016 Household Income and Expenditure Survey (HIES) for Sri Lanka.[36] After the data is aggregated into CPAT-compatible good/service categories,[37] households are grouped into

31 The methodology described here is primarily based on Coady and Newhouse (2006) and applied within several other studies (e.g., Parry, Mylonas and Vernon (2019) and IMF (2019b)).

32 See: http://data.bbs.gov.bd/index.php/catalog/182

33 See: http://microdata.gov.in/nada43/index.php/catalog/126

34 See: https://microdata.worldbank.org/index.php/catalog/1000

35 See: https://www.pbs.gov.pk/content/household-integrated-economic-survey-hies-2018-19

36 See: http://www.statistics.gov.lk/IncomeAndExpenditure/StaticalInformation

37 To facilitate relative cross-country comparability of results, CPAT uses a standardized classification of goods and services across all countries, distinguishing among 8 fuel (coal, electricity, natural gas, oil, gasoline, diesel, kerosene, LPG) and 14 non-fuel (appliances, chemicals, clothing, communications, education, food, health services, housing, other, paper, pharmaceuticals, recreation and tourism, transportation equipment, public transportation) good/service categories. This classification is, in part, informed by the implicit carbon intensity of non-fuel goods/services (i.e., goods/services with similar carbon intensities are classified under the same category).

population-weighted, per-capita consumption deciles, and budget shares are computed by dividing total consumption expenditure on each CPAT good/service category by each household's total consumption expenditure across all goods/services.

Sector-specific percent price increases from the simulated carbon tax are obtained directly from CPAT for each fossil fuel. Calculating (A) above in terms of the fossil fuel-specific price changes and budget shares yields an estimate of the loss in consumer surplus from price increases of fossil fuels (for example, electricity, gasoline/diesel, natural gas, etc.) following the introduction of a carbon tax (that is, the "direct" incidence effect).

Price increases for other consumer goods (due to higher energy/fossil fuel input prices) are calculated, assuming full pass-through of producer fossil fuel/energy cost increases onto consumer prices domestically (that is, flat/perfectly elastic supply curves). In particular, non-fuel sector price increases are obtained as the sum-product of: (i) each sector's input intensity in each fossil fuel; and (ii) the price increase of each fossil fuel induced by the carbon tax. Sectoral fossil fuel intensities are generally obtained from input-output/direct requirements matrices.

For the five South Asian countries analyzed in Section 2.3, these matrices are sourced from the GTAP-10 database,[38] which includes 2014 data for 65 sectors[39] that are, in turn, mapped to the CPAT non-fuel consumption good/service categories mentioned above to re-estimate equation (A). Summing the estimates across all non-fuel goods/services yields a measure of the loss in consumer surplus from price increases of non-fossil fuel products (for example, food, clothing, housing, etc.) following the introduction of a carbon tax (that is, the "indirect" incidence effect).

Adding up the direct and indirect effects yields an estimate of the total incidence effect. All incidence effects are scaled by the ratio of total CPAT carbon tax revenues in the year of the distributional effects analysis (that is, 2030) to "implied" carbon tax revenues from the distributional analysis (that is, the total incidence effect multiplied by projected/national accounts-adjusted total household consumption from the household budget survey). This scaling implicitly adjusts the estimated incidence effects for behavioral responses (as well as any structural changes in the economy as these are captured, for instance, via fuel switching in the power generation sector).

38 See: https://www.gtap.agecon.purdue.edu/databases/v10/index.aspx

39 These cover the following five fossil fuels: coal ("coa"), electricity ("ely"), oil ("oil"), natural gas ("gas", "gdt") and petroleum products ("p_c").

The analysis described above is subject to several shortcomings. First, in projecting the distributional analysis forward to 2030, the fossil fuel intensities (as given by the input-output matrices) and decile-specific household budget shares are assumed to remain constant. This means that the use of input-output matrices likely overstates consumer price changes for non-fuel goods/services, since the fossil fuel intensity of production would likely decrease due to higher energy prices. Second, some of the incidence of carbon taxation could be passed backward into lower producer prices, assuming upward-sloping supply curves in the medium-to-long run. If this results in lower capital returns, some of the incidence could be borne by capital owners or even workers (for example, in the form of lower wages). See also additional commentary in Parry, Mylonas, and Vernon (2019).

Appendix A.2.4. Primary energy use by type of fuel

The most important fuels in terms of economy-wide energy demand are coal in India and natural gas in Bangladesh and Pakistan. Nepal and Sri Lanka rely relatively more on biomass, which includes firewood (Table A.2.1).

Table A.2.1. Selected South Asian Countries: Total Primary Energy Use, 2019

(In percent of Total Primary Energy Use)						
Energy Source | Country	Bangladesh	India	Nepal	Pakistan	Sri Lanka	Total
Coal	9.5	47.3	6.6	12.1	13.0	41.3
Natural gas	55.8	3.1	0.0	24.0	0.0	7.2
Non-road oil	4.5	6.8	-0.3	8.1	9.9	6.8
Gasoline	1.5	4.0	2.9	7.7	12.9	4.3
Diesel	9.1	8.9	9.9	7.5	14.9	8.9
LPG	0.1	3.3	3.6	0.9	5.9	3.0
Kerosene	0.3	0.8	0.3	0.2	0.1	0.7
Nuclear	0.0	1.4	0.0	2.4	0.0	1.4
Non-biomass renewables	0.2	3.2	6.0	2.5	3.8	3.0
Biomass	19.0	21.3	71.0	34.5	39.6	23.4
Total	100	100	100	100	100	100

Source: IEA.
Note: "Biomass" includes firewood.

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