

Asia-wide impacts of COVID-19 on national food systems and recovery paths¹

David Laborde Debucquet and Valeria Piñeiro

Key messages

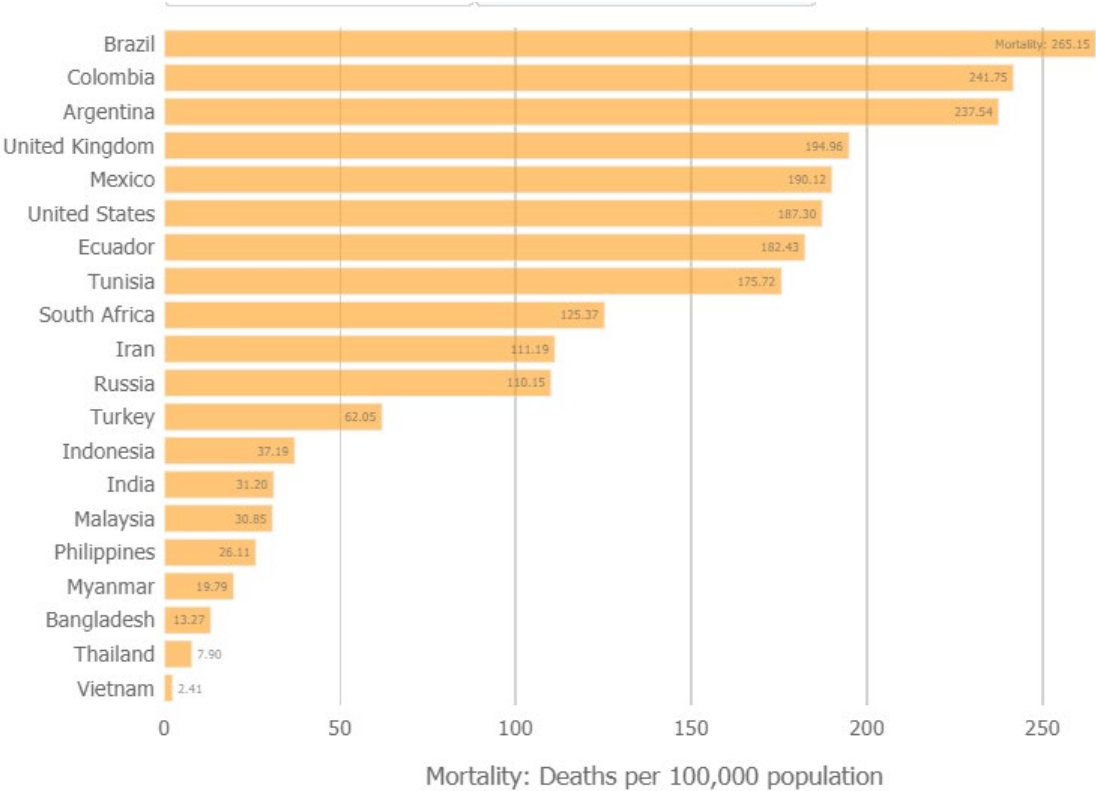
- 2020 was marked by a global recession. Most Asian economies witnessed a major economic downturn or, at the minimum, major decelerations in economic growth of magnitudes not seen since the 1997 Asian Financial Crisis.
- Being a major hub of globalization, Asia has suffered from both local supply disruptions caused by the COVID-19 restrictions and its policy responses and fallout in demand associated with the collapse on global markets.
- Economic recovery during 2021 was uneven. Expectations were that recovery during 2021 would promote economic activity back to the levels of 2019 in South Asia and East Asia, In Southeast Asia, though, the revival was expected to be delicate for a full recovery.
- Not all perturbations seen in 2020 and 2021 were COVID-19 related. Three countries in Asia faced country-specific crisis. Conflict was a major factor in Afghanistan and Myanmar, while North Korea did not suffer any registered COVID cases, and its woes were internal.
- This report assesses the impacts of the COVID-recession and recovery on household vulnerability, using a model-based analysis that captures the observed global macroeconomic trajectory as reported in the IMF's World Economy Outlook of October 2021. By capturing observed growth patterns, the scenario analysis thus incorporates the economic consequences of the supply disruptions captured and caused by the public health crisis as well as the effects of economic and social policy responses, such as fiscal stimulus and enhanced social protection. However, we do not include the household-level effects of targeted safety nets, especially in 2020 and 2021.

Background

Since early 2020, the COVID-19 pandemic has had a devastating effect on the global economy with a multidimensional domino effect. In addition to the direct impact on populations, linked to sickness and death, it is an unusual event equivalent to a supply shock caused by a fall in labor, due to lockdowns, travel and movement restrictions, and requirements of social distancing. In turn, these factors led to a demand shock caused by losses in employment and incomes leading to adverse effects on poverty and nutrition. Last but not least, social distancing has led to a shift in consumer behavior by altering their way to shop, and having access to nutritious food (Laborde et al. 2020).

In 2020, at the global level, there have been a) declines in trade, the international prices of some commodities, and tourism; b) increases in capital flight; and c) drops in remittances, all of which would affect exchange rates in developing countries. All these shocks add to the domestic negative economic trends, affecting particularly developing countries (Laborde, Martin, and Vos 2021). During 2021 there was a strong rebound reflected in a recovery of international commodity prices and resumption of global economic activity. However, delayed rollout of COVID vaccination schemes in several countries and the emergence of new virus variants slowed the recovery.

Figure 1. COVID-19 deaths (Per 100,000 population)

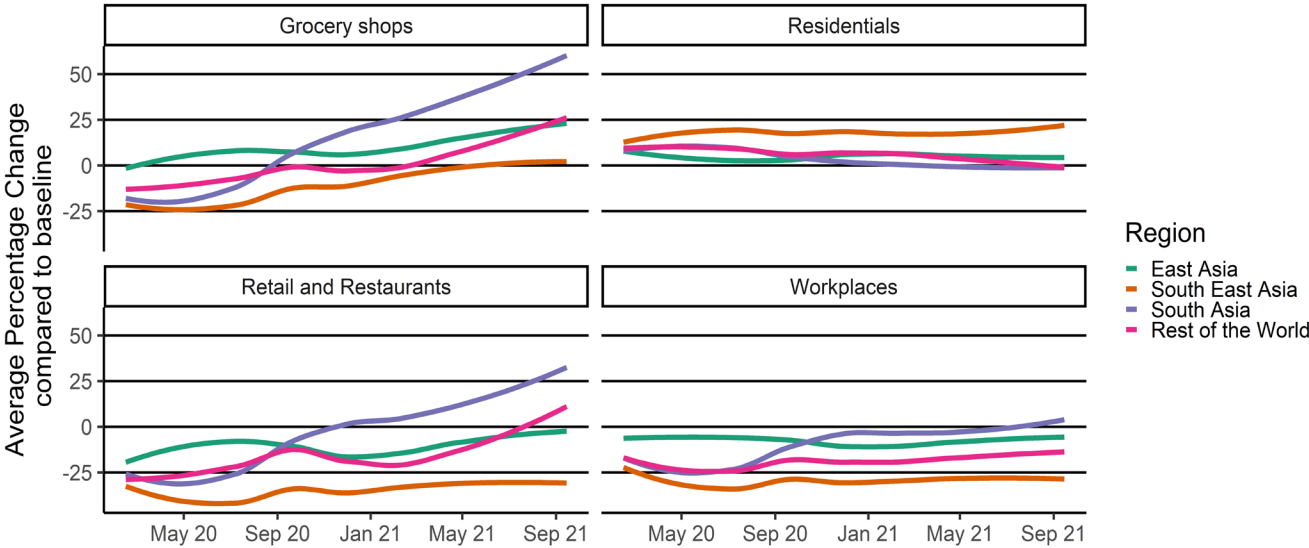


Source: authors with data from <https://coronavirus.jhu.edu/data/mortality>

Asian countries have been hit hard by the pandemic. The growth dynamics of developing Asia stopped with an average real GDP growth rate of -0.1 percent in 2020 compared to the 5 to 6 percent annual average of the previous ten years. South and South-East Asia were among the worst hit regions in the world with actual recession (resp. -5.6 and -4 percent of growth). The human life cost was also high: among the top twenty countries with largest ratio of deaths to 100,000 population and eight of these countries are from Asia (see Figure 1).

However, as we can see in Figure 2, people’s behaviors—as captured by Google Mobility Reports (Google 2021) —have been moving towards pre pandemic patterns in most countries with respect to their movement linked to consumption behavior—trips to the grocery shops, retail and restaurants— noticing some differences between regions, especially for South East Asian countries, that show a very slow return to the normal situation, while South Asia displays more positive outcomes despite the rise of Delta-variant cases in the first semester of 2021. This pattern is largely confirmed by people and location (at home or at work), highlighting that in East and South Asia people are “back to work”, except with a few shifts in practices (e.g., telecommuting for some workers), while for Southeast Asia, the workplace location for about 25 percent of the population appears to be still impacted by the crisis.

Figure 2. Changes in people mobility. Regional median: March 2020 to September 2021

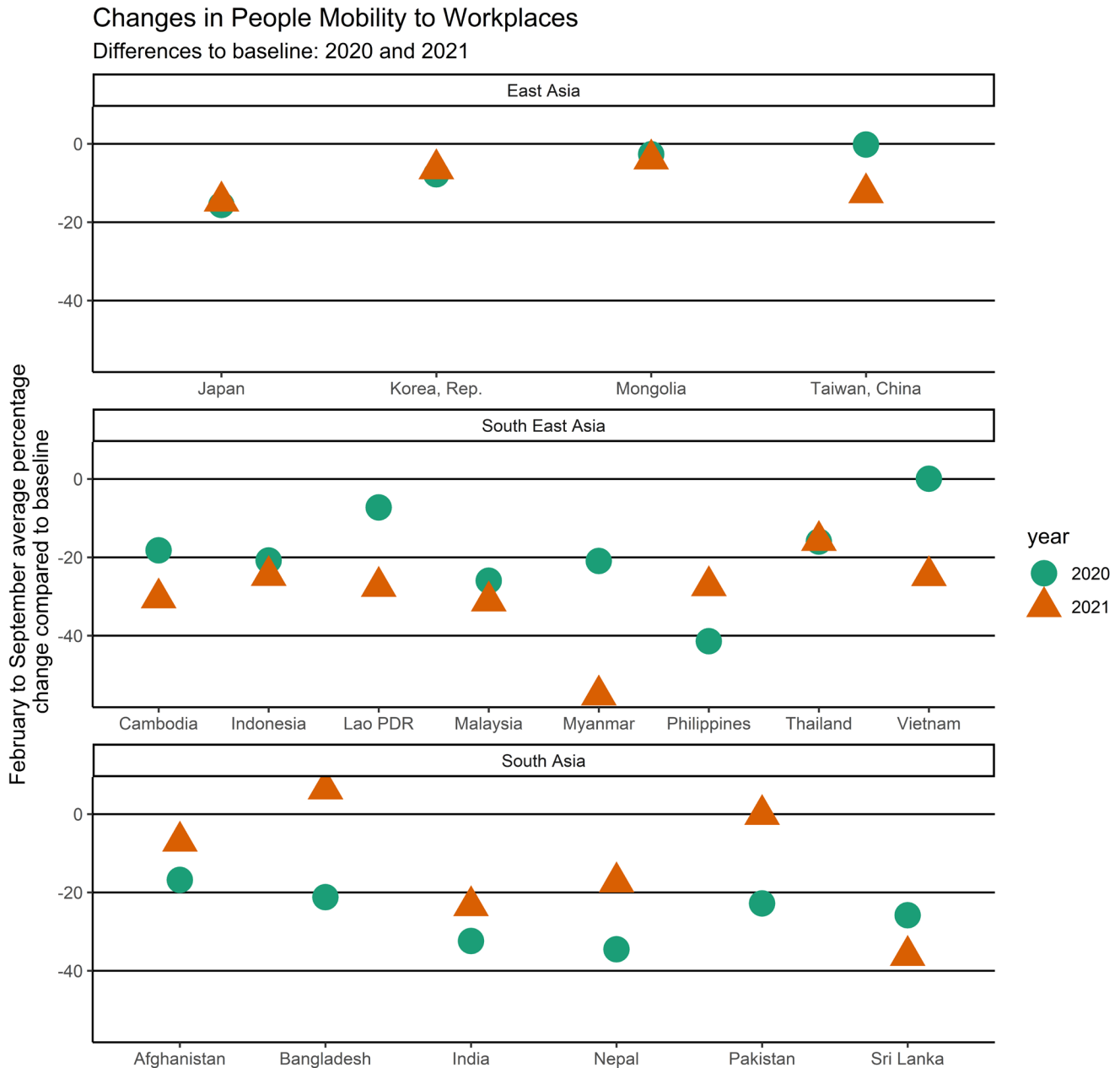


Source: Based on Google Mobility Data, Author’s computation

Figure 3 shows the information on mobility to the workplace by country. Obviously, Myanmar is an outlier where COVID related problems are combined with major political turmoil, leading to a large disruption for labor practices. We also see that the regional differences noted previously are confirmed at the country

level: except for Sri Lanka, and Taiwan, all countries in South and East Asia show better performance in 2021 than in 2020. The situation is largely reversed for Southeast Asian countries where labor practices appear to be more impacted in 2021 than in 2020, except for the Philippines.

Figure 3. Mobility to workplace indicator



Source: Based on Google Mobility Data, Author's computation

The 2021 situation is still developing, and the COVID-19 crisis continues to evolve and raises a number of issues that make it difficult to estimate the full cost to the global economy. These issues include the estimation of the length of the crisis, the number of countries that will have to keep dealing with the virus and its variants, the number of workers affected, the reduction in economic activity, the short- and long-run effects, and implementation of monetary and fiscal policies at the national and global level to address the crisis. In this brief, we propose an assessment of short- and medium- term economic and food security

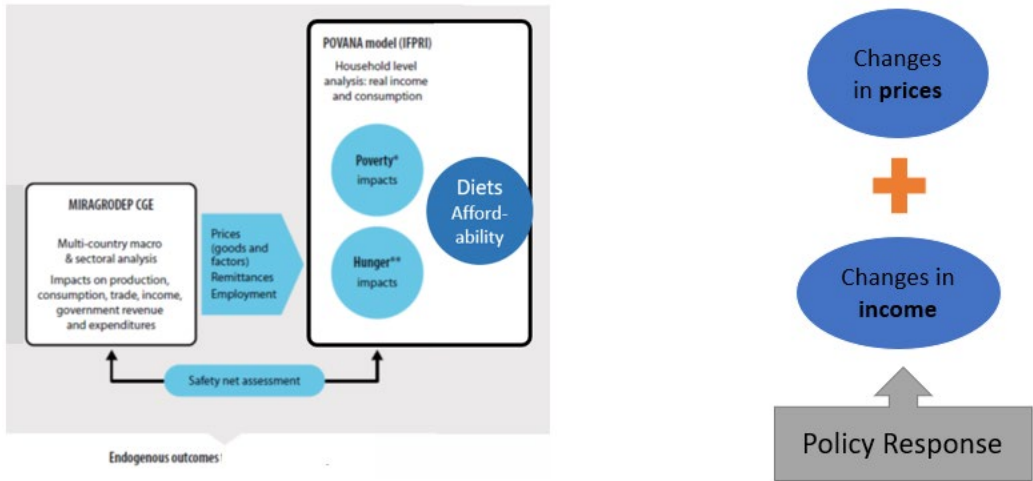
impacts of the COVID-19 crisis based on most recent information as of mid-September 2021. While uncertainties remain, we capture the most important stylized facts available, particularly in terms of intra- and inter-regional heterogeneity. This last dimension is particularly important to guide policy responses and is important as we have seen in Figure 2 and Figure 3.

Methodology and scenarios

We use a global modelling framework to assess the potential impacts of the COVID-19 crisis on global poverty and food security in Asia. Specifically, we combine two economic modeling frameworks: IFPRI’s global computable general equilibrium (CGE) model, MIRAGRODEP and the POVANA household dataset and model.

The MIRAGRODEP model allows for a detailed and consistent representation of the economic and trade relations between countries. International economic linkages are captured through international trade in goods and services, as well as through capital flows. The two modeling frameworks are linked in top-down fashion, that is, the relevant results of the CGE model-based scenario analysis are introduced, along with the direct impacts of the pandemic on households, as shocks to the household survey model to assess poverty outcomes. This process is summarized in Figure 4.

Figure 4. Methodological framework: from macroeconomic shocks to household impacts in terms of poverty, food security and nutrition



Source: Based on Laborde et al, 2020.

The POVANA household model uses data on the full income distribution for around 300,000 households. Having this detail avoids having to make ex-ante or ad-hoc assumptions about how the economic shocks caused by COVID-19 change the distribution of income in any given country. In our approach, real incomes of households change endogenously with the simulated changes in the full vector of changes in

employment, and changes in prices of goods, services, and factors (including wages), and other income determinants (productivity). Changes in poverty levels are calculated by comparing the poverty rates before and after the changes in household incomes capturing changes in real income at the household level. Finally, the POVANA data base provides information about household consumption patterns. This also allows to identify the impacts of economic shocks (like the consequences of COVID-19) on the costs of goods consumed by the household, and particularly on the costs of food consumed. Income losses and food price shocks will hurt poor people's food security disproportionately since they spend most of their income on food.

This approach has been successfully used in various estimates releases in 2020 (Vos, Martin, and Laborde 2020) at the regional and global level. Methodological details are available in (Laborde, Martin, and Vos 2021). A diet-focused discussion is available in (Laborde et al. 2021), while mid-term projections have informed the prevalence of undernourishment estimates released in the latest SOFI report (FAO, IFAD, UNICEF, WFP and WHO 2021).

In this report, we focus on mid-term projections from 2020 to 2030, using a range of data collected about short- and medium-term impacts of COVID-19 with updated data on global and regional drivers, international prices (observed by commodities) and current account (trade volume and prices, services such as tourism income and remittances), and on domestic drivers, GDP and fiscal response (domestic stimulus package and safety nets).

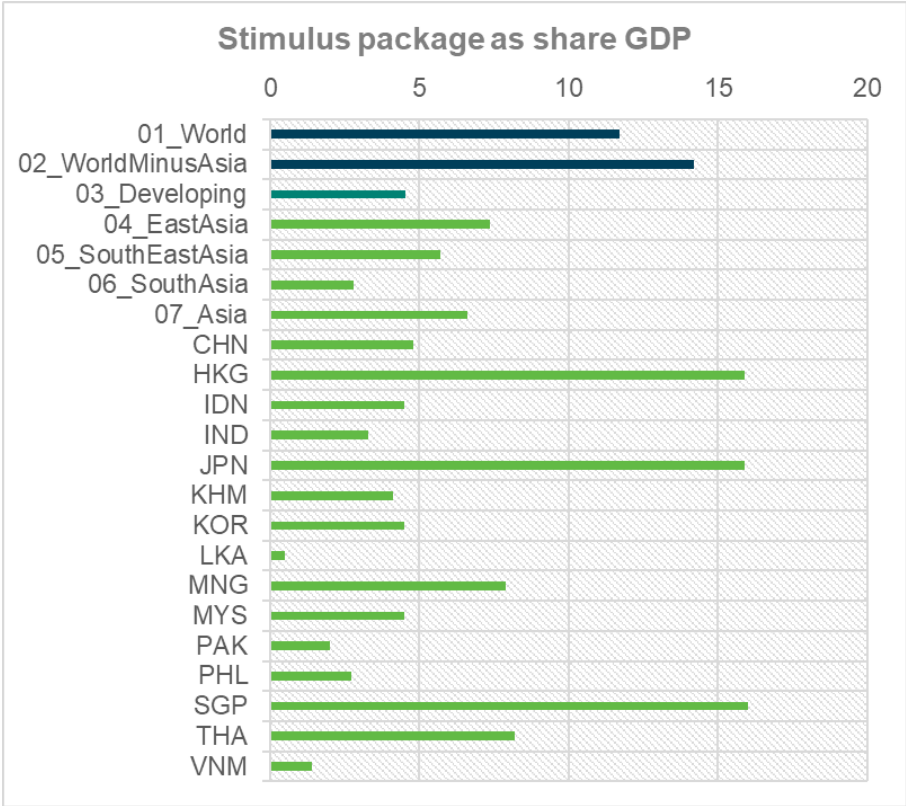
Using the IMF projections for global growth revised in October 2021 (IMF 2021), that includes a few updates of the estimates from the Asian Development Bank (Asian Development Bank 2021), total factor productivity for the various years are calibrated (equivalent to efficiency use of existing resources, and therefore employment). The model is run till 2030, however no long-term shift in economic agents' behavior is assumed. We also do not implement a long-term reduction in human capital linked to the lack of participation to labor markets for adults, or to reduction in school attendance in 2020 and 2021.

Another assumption regarding to labor issues is related to remittances: while remittances flows in this global model are impacted through the labor markets and the fall in wage income, it is not assumed that foreign workers move between countries during the period considered (i.e. the existing stock of foreign workers in each country is not changed).

Governments have reacted to the pandemic with health initiatives directed at controlling the spread of the coronavirus (e.g., lockdowns at home), increasing treatments for the affected population (e.g., treatments and vaccines). At the same time, there has been a variety of economic and social policy initiatives trying to mitigate the negative impact on families and firms of losses of incomes and employment (expanding programs such as cash transfers, food aid and subsidies, unemployment compensation, and the

like). However, figure 5 shows that the size of the fiscal stimulus packages (as a percentage of GDP) varied greatly across countries (see Figure 5).

Figure 5. Fiscal stimulus packages as a share of GDP



Source: Author's calculations based on IMF WEO, October 2021.

We designed two scenarios for the present study. The first is the base scenario (or counterfactual) representing the world without COVID-19, sets the global economy in the fall of 2019, and keeps expected growth path—at that time—for the following years. The second one, in a world with COVID-19, captures the new macroeconomic trajectory of the world, consistent with the IMF World Economy Outlook released in October 2021, therefore capturing the distortions originated from the health crisis and its direct policy responses (e.g., social safety nets).

It is important to note that other events not related to COVID-19 like, conflict², political tensions and instability, production bottlenecks, financial turmoil and long-term effects will also threaten recovery. As some countries continue to struggle to contain the virus and its new variants, the recovery would be uneven between countries and regions.

² Myanmar's economy has been hit hard by mass protests, strikes and sanctions following a military coup on February.

Results

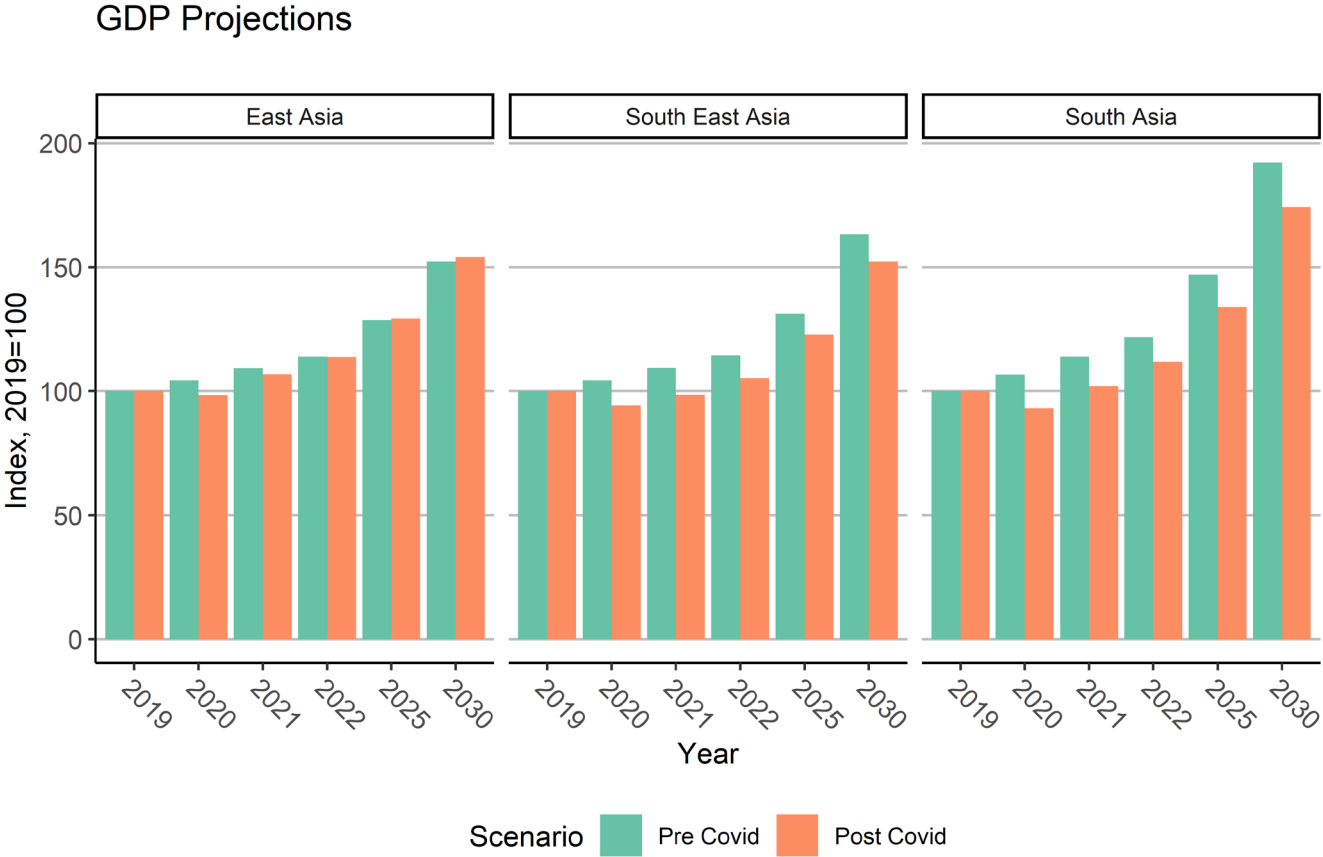
We would like to mention that—at the time of writing—there were still many uncertainties regarding the full outcomes for 2021, hence, the results presented in this report could change based on new information on: international travel is still not reopened on a large scale, vaccination progresses at very heterogenous speed, COVID variants lead to new lockdowns and perturbations, while other factors (like droughts in Brazil or possible bumper harvests in India) could change the outlook for global agricultural production and food prices.

Macroeconomic impacts

Looking at the GDP projections of the pre-COVID-19 baseline from October 2019 and the one with a world with COVID-19. Figure 6 displays the evolution overtime for the three main sub-regions in Asia. We see that the Southeast Asia and South Asia have entered in a severe recession in 2020, with lower GDP level than in 2019. However, the three regions are expected to have positive growth in 2021. This expected growth should bring South Asia and East Asia back to their 2019 GDP level, while Southeast Asia will not have enough growth in 2021 to fully recover.

Looking at the two poorest regions in Asia—South Asia and Southeast Asia—will continue to suffer from long-term consequences of the COVID-19 shock. The 2020 recession and the 2021 slow recovery will add up to significant lost growth. Before the pandemic, South Asia was expected to have a decade of strong growth, that would have contributed to reduce the region's levels of poverty and food insecurity. This will not be the case anymore, as South Asia is the most impacted sub-region in the continent.

Figure 6. GDP projections by sub-region

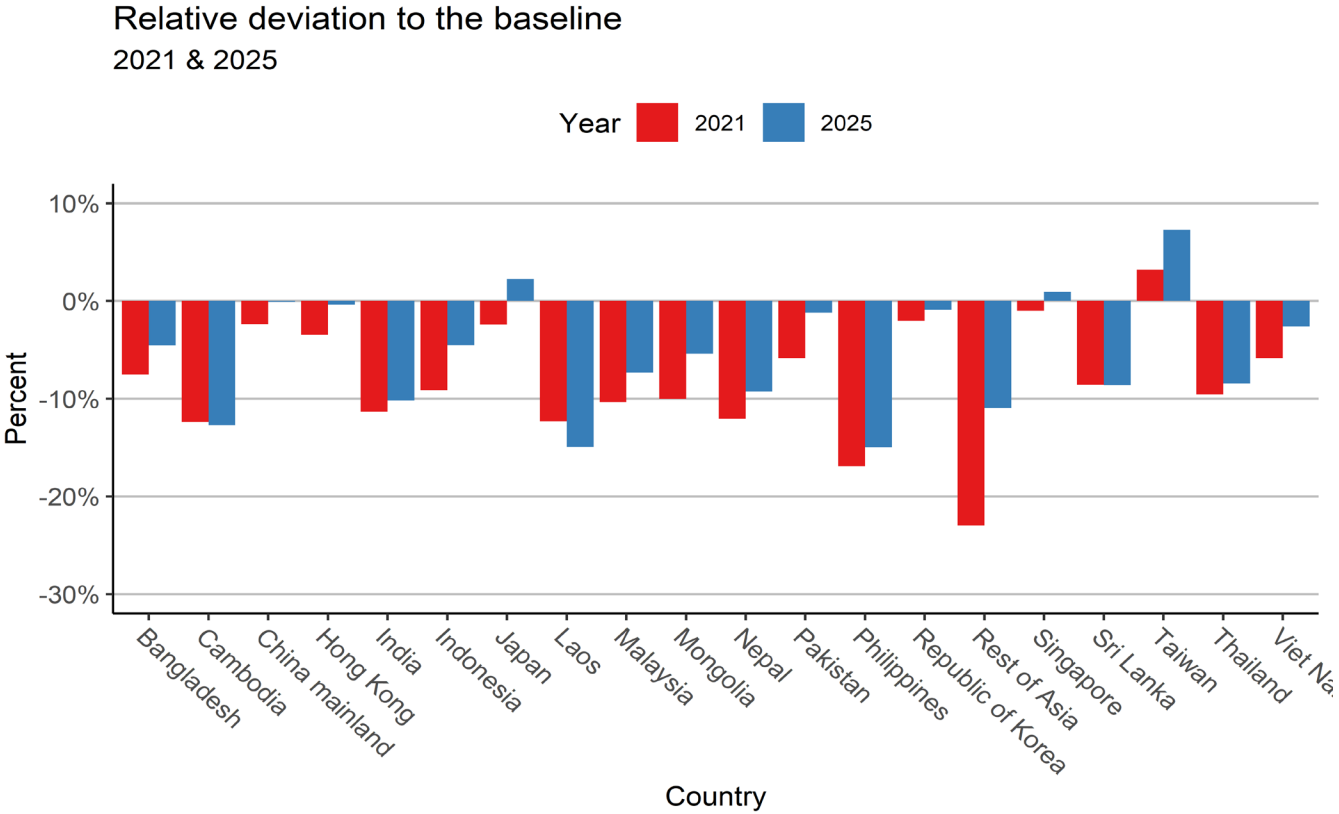


Source: MIRAGRODEP simulations based on the IMF WEO (October 2021)

At the country level, Figure 7 shows that within each sub-region we also observe significant heterogeneity. Except for three countries included in our rest of Asia aggregate, namely Afghanistan, North Korea and Myanmar, no other countries in Asia should know a recession in 2021 (i.e., a negative growth rate in 2021 on a year-to-year basis). However, most countries will still be in 2021 below their expected level and this situation will last for several years.

In South Asia, we expect Pakistan to have nearly fully recovered by 2025, while Bangladesh will still have a GDP 5 percent lower than in previous projections in 2025. India, Nepal and Sri Lanka are more severely impacted with also strong lasting effects. In Southeast Asia, Viet Nam is the less impacted country by the crisis, while Cambodia, Laos and the Philippines face the most severe shocks. Philippines looks a little bit different that the rest of the countries in the sub-region given that it is expected to have a strong growth in 2021, of 6 percent, but was among the most hurt countries in Asia in 2020. It is important to notice that the situation these countries face are not only COVID-19 driven, but military and political conflict shocks are also present.

Figure 7. Changes in GDP projections: 2021 & 2025. Selected countries



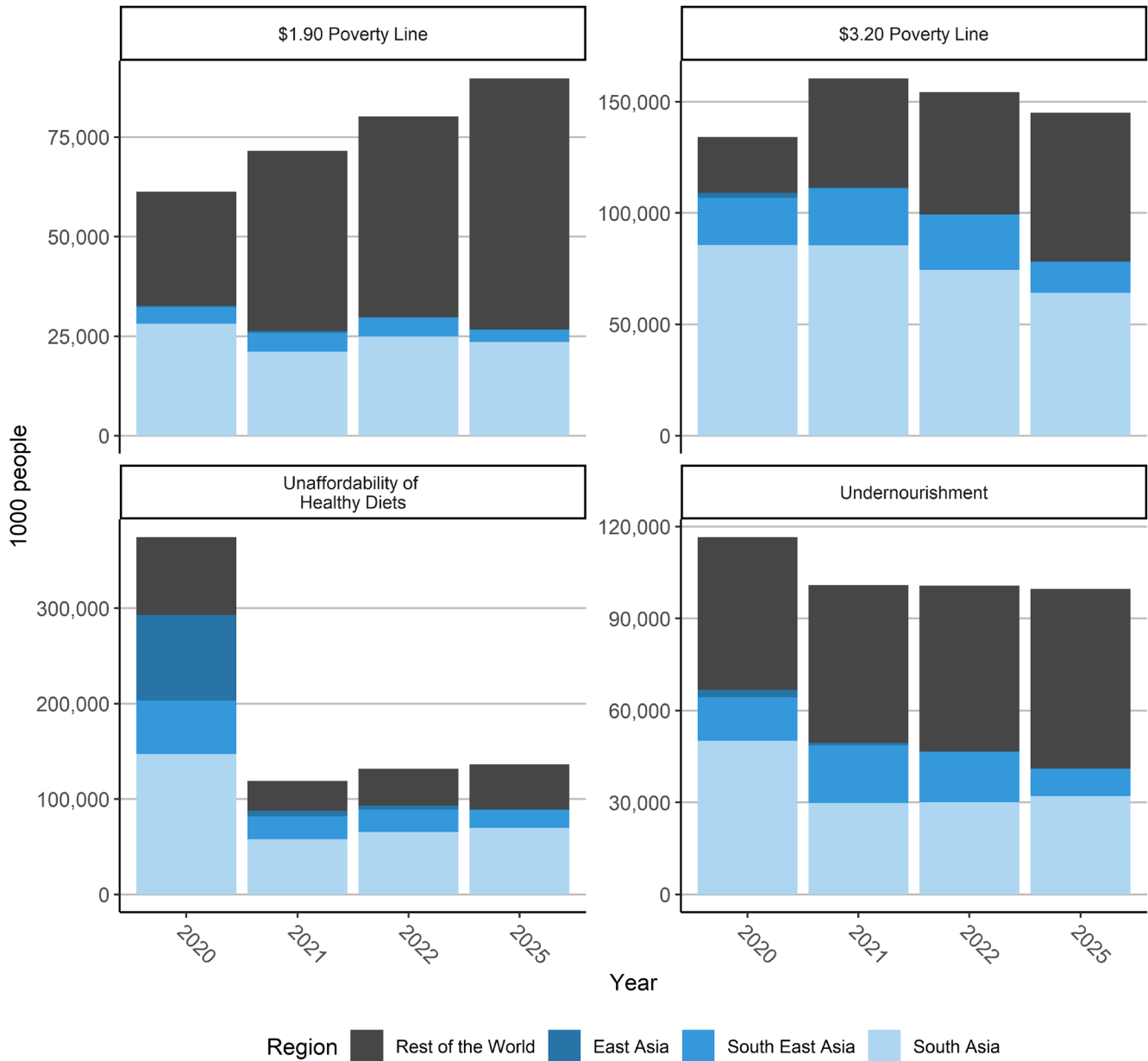
Source: MIRAGRODEP simulations based on the IMF WEO (October 2021)

Poverty impacts

While agriculture productivity is not directly impacted by the COVID-19 shock and the following up macroeconomic policy responses, the modification in economic growth and factor productivity changes the households’ income in 2020 and in the future years. In this new context, we observe significant increase in vulnerability not only in the short-term (2020, 2021) but also in the medium- and long-term (2025-2030). We illustrate these changes with four main indicators: people in extreme poverty (\$1.90 international poverty line), in poverty (\$3.20 international poverty line), in undernourishment (caloric hunger) and people not being able to afford a healthy diet, as defined in the SOFI 2019. Due to different dynamics across various factors of production, e.g., unskilled labor vs capital, and heterogenous price responses during the shock and the recovery period across food and non-food products, we observe various evolutions of these four indicators. Figure 8 shows the additional number of people facing poverty or hunger for the three main Asian areas and the rest of the world, while Figure 9 shows for selected countries baseline prevalence rates and the effects of the COVID-19 crisis.

Figure 8. Number in people falling into various forms of poverty and malnutrition

Current Deviation from Baseline



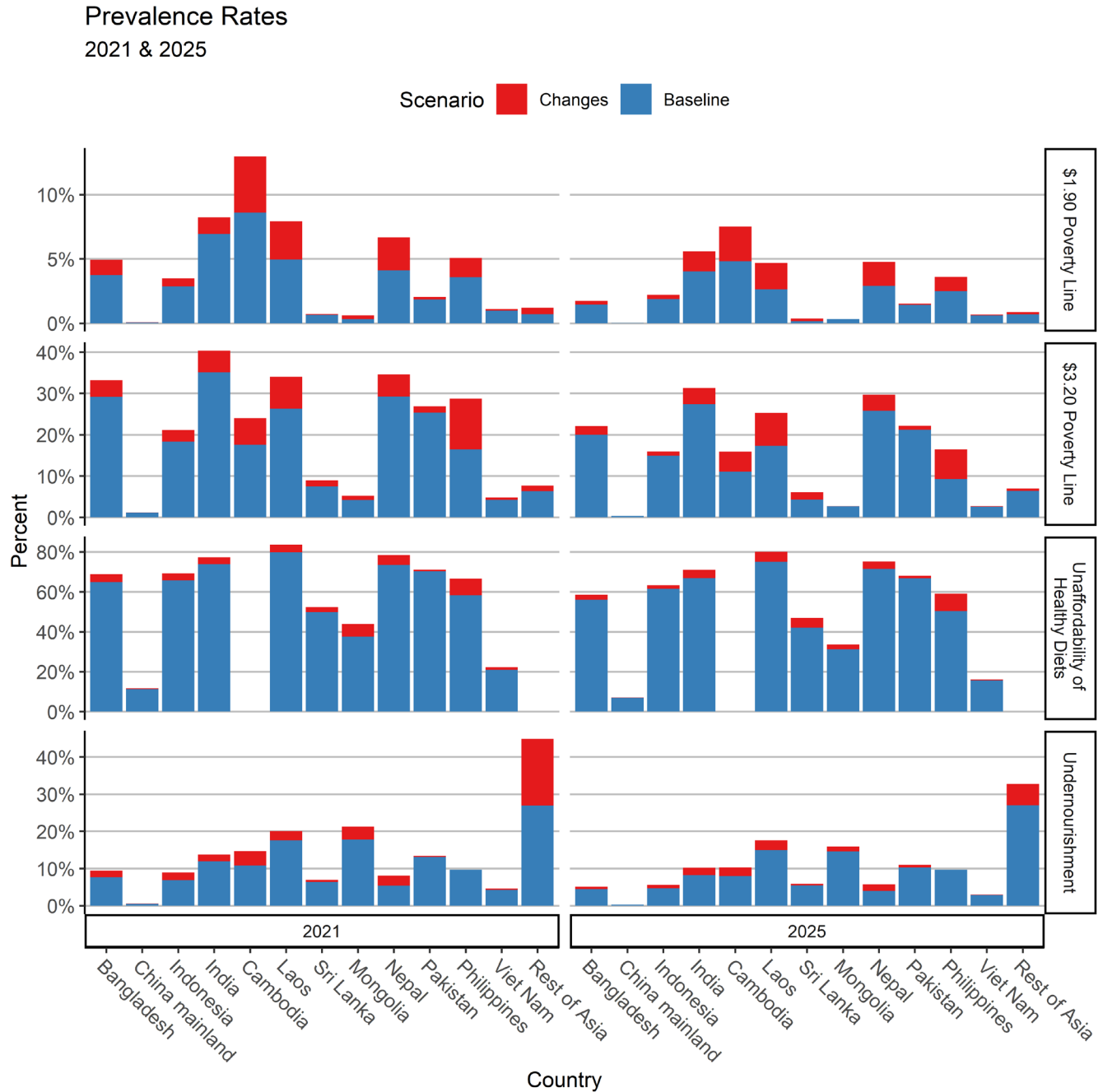
Source: MIRAGRODEP & POVANA simulations.

Looking at Figure 8, we can see that 21 million people are at risk of falling into extreme poverty in 2021, 29 million in 2022 and 26 million by 2025 in Asia, where South Asia represents 80 percent of the total amount.

There will also be 61 million more people at the risk of not being able to afford a healthy diet in 2021, 66 million in 2022 and a little bit more than 66 million in 2025 in Asia. Highlighting the faster recovery in terms of poverty compared to hunger.

It is important to mention that in 2020, more than half of the people at risk in falling into hunger in the world were located in Asia and three-fourths of them in South Asia. A similar pattern emerges for extreme poverty; however, Asia can recover at a faster rate than the rest of the world. By 2025, only 25 percent of the additional undernourished and 29 percent of additional extremely poor globally are projected to be in Asia.

Figure 9. Changes in prevalence rates



Source: MIRAGRODEP & POVANA simulations.

Looking at Figure 9, we can see that India has relatively small impacts on prevalence rate changes, but a strong effect on the number of people falling under extreme poverty due to the country size (large population). Cambodia, Laos, and Nepal appear to be particularly impacted too, they are also countries with initially high levels of poverty and hunger (compared to the region).

Lasting impacts of the crisis are expected to be felt until 2030, which could compromise achievement of the Sustainable Development Goals (SDG) agenda. The economic losses suffered during 2020 and 2021

has caused a decline in new investment, auguring for slower economic growth in the remainder of the decade. Even when not accounting for the lasting adverse impacts on human capital of the lack of access to education and health services during the crisis, Asia is expected to have 26 million more people at risk of chronic hunger, 19 million at risk of extreme poverty (at a poverty line of PPP\$1.90 per person per day), 65 million more in moderate poverty (at a poverty line of PPP\$3.20 per person per day) and 91 million more people who will be farther from being able to afford healthy diets.

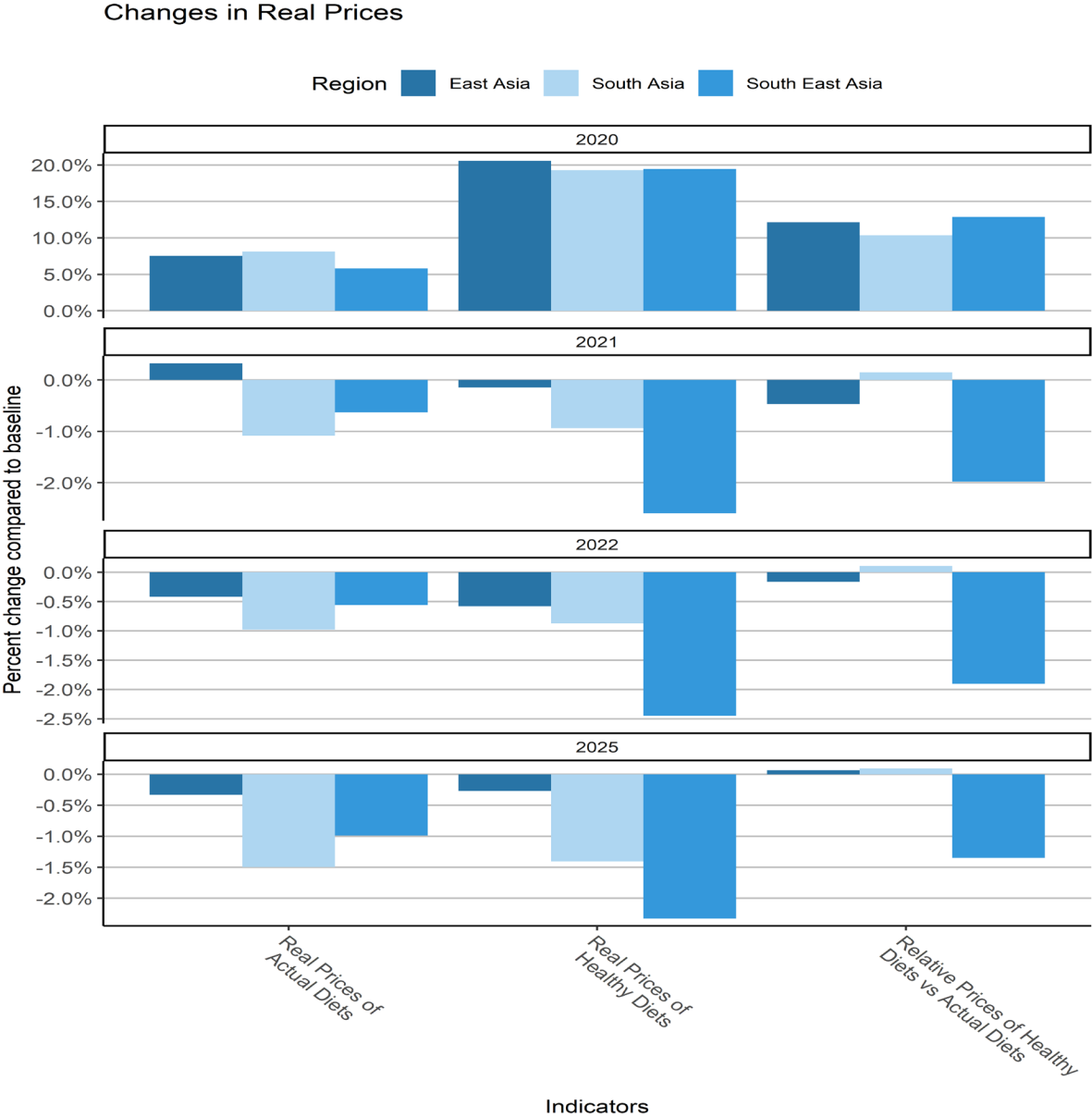
It is important to note that the rest of Asia includes three countries that have very “specific” dynamics as well as data issues include Afghanistan, North Korea, and Myanmar. The indicator on diets affordability is not available for these countries, and the poverty data available has some level of lack of accuracy. However, the available data for undernourishment appears to be more documented, showing also bigger impacts. The situation that these three countries are facing are not only COVID but also conflict driven.

Changes in diets

In addition to the income shock observed, relative food prices have been significantly impacted by the crisis. In 2020, several high value and/or perishable products were distorted at the national level, leading to price increases for consumers due to social distancing and access problems and also at the international level with problems due to supply disruptions (air travel, delays in ports and others). In 2021, these effects have disappeared in most countries with the reopening of many distribution channels, however, there has been a strong increase of oilseeds, vegetable oil, and grain prices on world markets, driven by strong demand from China, and by increases in oil prices leading to a swing in relative prices. We illustrate these variations with Figure 10.

Noting the differences in the y-axis scale in Figure 10, we can see that in 2020 real prices of a healthy diet increased around 20 percent compared to the baseline in the three Asian regions covered in the figure while real prices of actual diets in the same regions by around 5-8 percent. However, in 2021, East Asia shows a slight decrease in the real prices of healthy but an increase in the one for actual diets (also a small number, less than 1 percent). South Asia has a reduction of around 1 percent in the real prices of both diets (slightly higher for actual diets) while Southeast Asia sees a clear and bigger decrease in the real prices of healthy diets (around 2.5 percent) compare with real prices actual diets (less than 1 percent). These numbers are expected to stay around the same levels until 2025.

Figure 10. Evolution of real food basket price index at the consumer level



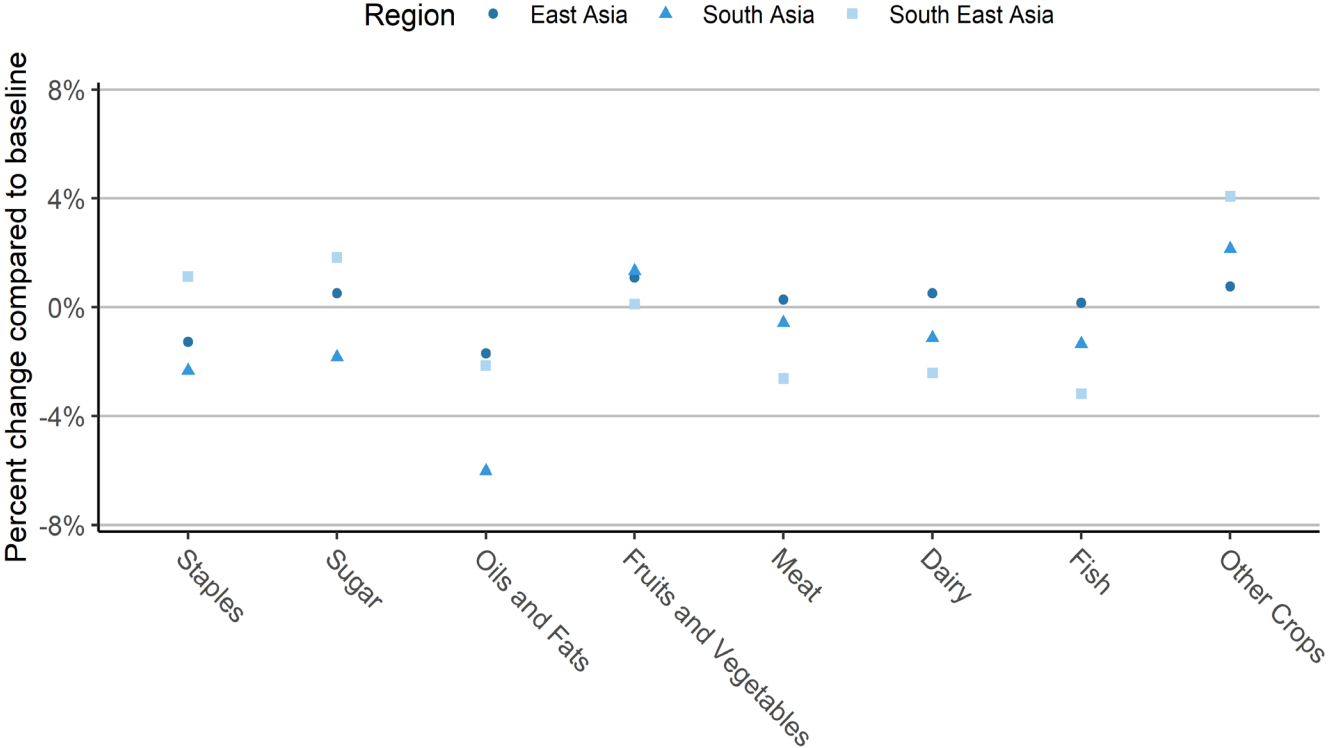
Source : MIRAGRODEP simulations based on the IMF WEO (October 2021).

Evolution of income and prices lead to changes in diet composition. Figure 11 shows the evolution of consumption per capita compared to the baseline, for major food groups in 2021. The reduction in consumption of high value products and perishable are more limited than in 2020 due to less distortions in these value chains and the rebound in income growth. However, consumption of staples and in particular vegetable oils are depressed due to high prices for these commodities in 2021 on world markets.

At a regional level, Southeast Asia has the largest decrease in consumption of meat, dairy and fish products at around 3 percent compared to the rest of Asia while East Asia observed the smallest increase of

less than 1 percent. Southeast Asia also has the biggest increase in consumption of staples, sugar products and other crops in 2021 compared to the case of no COVID, highlighting a change in the consumption patterns against healthier goods.

Figure 11. Evolution of diet composition as measured by changes in consumption per capita



Source : MIRAGRODEP simulations based on the IMF WEO (October 2021).
 Note: Food away from home not included in the figure.

Concluding remarks

With more effective infection control and vaccine deployment, most Asian countries will grow in 2021. However, the speed and strength of the recovery will largely vary across countries depending on access to medical interventions, effectiveness of policy support, exposure to cross-country spillovers, and structural characteristics of the countries.

In the short-term, tracking the affordability of food at the national level will be key. Real prices may affect households differently depending on their source of income—wages vs social transfers—, the first one may move with inflation while the later may not. Making sure that policy makers adapt to a world with changing nominal and relative prices will be important.

In the long-term, it is crucial to continue looking at possible lasting effects of the crisis that may appear as a consequence of reduction in the access of health and schooling services. Today, we are farther

away from reaching the SDGs than we were two years ago. This is a serious concern and only active policy may help in addressing the new gaps, especially for vulnerable groups.

ABOUT THE AUTHORS

David Laborde Debucquet is a Senior Research Fellow and Valeria Piñeiro is a Senior Research Coordinator with the Markets, Trade and Institutions Division at IFPRI.

ACKNOWLEDGEMENTS

This study was funded by The World Food Programme's Bangkok Regional Bureau and implemented in consultation with the WFP regional bureau. WFP staff also provided extensive feedback on various drafts of this study. However, any errors are entirely our own, and the conclusions and policy recommendations in this study also represent those of the authors.

REFERENCES

- Asian Development Bank. 2021. "Asian Development Outlook (ADO) 2021 Update: Transforming Agriculture in Asia." Asian Development Outlook. Asian Development Bank. <https://www.adb.org/publications/asian-development-outlook-2021-update>.
- FAO, IFAD, UNICEF, WFP and WHO. 2021. "The State of Food Security and Nutrition in the World 2021. Transforming Food Systems for Food Security, Improved Nutrition and Affordable Healthy Diets for All." Rome: FAO. <https://doi.org/10.4060/cb4474en>.
- Google. 2021. "Community Mobility Reports." Google. <https://www.google.com/covid19/mobility/>.
- IMF. 2021. "WEO Data: October 2021 Edition." World Economic Outlook Database. International Monetary Fund. <https://www.imf.org/en/Publications/WEO/weo-database/2021/October>.
- Laborde, David, Anna Herforth, Derek Headey, and Saskia de Pee. 2021. "COVID-19 Pandemic Leads to Greater Depth of Unaffordability of Healthy and Nutrient-Adequate Diets in Low- and Middle-Income Countries." *Nature Food* 2 (7): 473–75. <https://doi.org/10.1038/s43016-021-00323-8>.
- Laborde, David, Will Martin, Johan Swinnen, and Rob Vos. 2020. "COVID-19 Risks to Global Food Security." *Science* 369 (6503): 500–502. <https://doi.org/10.1126/science.abc4765>.
- Laborde, David, Will Martin, and Rob Vos. 2021. "Impacts of COVID-19 on Global Poverty, Food Security, and Diets: Insights from Global Model Scenario Analysis." *Agricultural Economics* 52 (3): 375–90. <https://doi.org/10.1111/agec.12624>.
- Vos, R, W Martin, and David Laborde. 2020. "How Much Will Global Poverty Increase Because of COVID-19: Blog." IFPRI. March 20, 2020. <https://www.ifpri.org/blog/how-much-will-global-poverty-increase-because-covid-19>.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

A world free of hunger and malnutrition

IFPRI is a CGIAR Research Center

1201 Eye Street, NW, Washington, DC 20005 USA | T. +1-202-862-5600 | F. +1-202-862-5606 | Email: ifpri@cgiar.org | www.ifpri.org | www.ifpri.info

© 2022 International Food Policy Research Institute (IFPRI). This publication is licensed for use under a Creative Commons Attribution 4.0 International License (CC BY 4.0). To view this license, visit <https://creativecommons.org/licenses/by/4.0>.