

ASSESSING PRESENT AND FUTURE GLOBAL POVERTY: PROSPECTS AND CHALLENGES FOR ACHIEVING SDG1

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1. INTRODUCTION

The first Sustainable Development Goals (SDG1) calls for “ending poverty in all its forms everywhere”, where poverty is defined as living on less than \$1.90 a day, measured in 2011 Purchasing Power Parity prices. Given the publication lag of official, comparable figures on absolute poverty, short-term monitoring of the fulfillment of SDG1 in an efficient manner is particularly challenging. In this note, we review current efforts carried out in order to quantify and project poverty rates worldwide within an internally consistent econometric framework (see Crespo Cuaresma et al., 2018). We briefly describe the method employed by Crespo Cuaresma et al. (2018) and provide an overview of the projected dynamics of poverty rates worldwide, concentrating on the evaluation of the likelihood of fulfilling SDG1.

The results of benchmark poverty projections indicate a continued decrease of the global poverty rate in the coming decade, although the dynamics at the world level mask significant heterogeneity across countries. In particular, poverty rates in many countries in Sub-Saharan Africa are projected to increase or not to decrease at a path that would allow them to fulfill SDG1 by 2030.

This note is structured as follows. In section 2, we briefly present the main elements of the econometric tool employed to obtain poverty projections at the global level and describe scenario-based poverty projections at the global level. In section 3, we describe the most important features of our benchmark poverty projections at a more disaggregated level, concentrating on the implied likelihood of fulfilling SDG1. Section 4 concludes and proposes avenues for further research. The benchmark poverty projections described in this study can be visualized in an interactive manner making use of the World Poverty Clock at <https://worldpoverty.io/>.

2. MODELLING POVERTY DYNAMICS: A PROJECTION EXERCISE

The development of robust econometric modelling tools to monitor poverty changes and provide early warning signals concerning income dynamics is a central element of evidence-based policy making in the context of global development policy. Projection exercises for poverty rates implies the definition of scenarios for the future development of average income per capita, as well as for the distribution of income across individuals. Crespo Cuaresma et al. (2018) provides a set of projections based on combining medium-term GDP forecasts from the International Monetary Fund (IMF) with long-term projections of income per capita employed in climate change research (Crespo Cuaresma, 2017; Dellink et al., 2017) under the assumption of a stable income distribution. In particular, the method in Crespo Cuaresma (2017) is used to obtain future income per capita trends based on existing population projections by age, sex and educational attainment level developed by K.C. and Lutz (2017). This methodological

framework rests upon the definition of five different scenarios (so-called Shared Socioeconomic Pathways, SSP, SSP1 to SSP5) with accompanying narratives described as a combination of socioeconomic challenges to climate change adaptation and mitigation. The SSP1 scenario ("Sustainability") presents a narrative with low socioeconomic inequality and strong international cooperation. The SSP2 ("Middle of the Road") scenario, which acts as a benchmark scenario for the poverty projections presented here, assumes that the trends and historical patterns observed in the data will continue in the future. As such, this scenario can be considered the most likely one from a statistical point of view. SSP3 ("Regional Rivalry") creates a narrative which is consistent with a fragmented world and a reversion of globalization trends. SSP4 ("Inequality") provides a narrative with strong inequalities both across and within countries, coupled with the emergence of a global elite. Finally, SSP5 ("Fossil-fueled Development") describes a world driven by resource-intensive technological progress and high economic growth, in the context of widespread globalization. Together with these qualitative narratives associated to the five scenarios, quantitative projections of population by age, sex and education (K.C. and Lutz, 2017) have been developed, which have been in turn used to project GDP per capita worldwide (Crespo Cuaresma, 2017; Dellink et al., 2017).

Linking the long-term projections of GDP by SSP scenario to short-term forecasts provided by the IMF, scenario-specific income per capita projections can be obtained. Under the assumption of a stable income distribution of income within countries, changes in poverty can be computed in a straightforward manner. Figure 1 shows the dynamics in poverty rates at the world level by SSP scenario. Under all scenarios, the number of persons living in extreme poverty is projected to decrease over the following years, with stagnating figures for SSP3 and SSP4 after the middle of the coming decade and steady decreases in the rest of the scenarios. When factoring in the different developments of total world population implied by the scenarios, poverty rates are projected to decrease for all SSPs.

Our analysis of future trends in global poverty concentrates on the results of the SSP2 scenario, which assumes a continuation of existing trends in human capital accumulation and income convergence dynamics at the global level. Such a scenario implies a high speed of poverty reduction in South Asia, East Asia and the Pacific, while poverty reduction in Sub-Saharan Africa are less marked over the target period of 2020-2030. Compared to more pessimistic scenarios, the reduction in poverty rates in SSP2 are very substantial. For instance, the projected poverty rate in Nigeria for the year 2030 is almost 4.5 percentage points lower in this scenario as compared to SSP3.

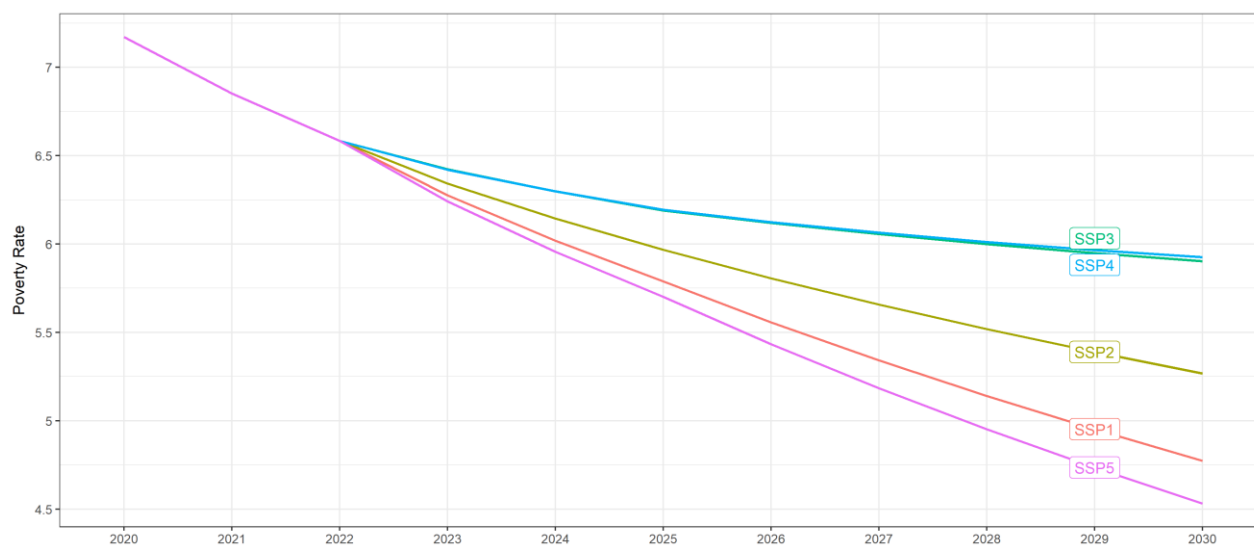


Figure 1: Poverty rate projections, 2020-2030 by Shared Socioeconomic Pathway scenario (source: Crespo Cuaresma et al., 2018)

3. THE PRESENT AND FUTURE OF GLOBAL POVERTY

The projections under the benchmark scenario (SSP2) can be used to categorize countries depending on their likelihood of fulfilling SDG1 by 2030. Using the projected trends in poverty rates by country, Figure 2 presents the classification of countries based on whether poverty is expected to increase (countries in red), be reduced by enough as for it to fulfill SDG1 by 2030 (that is, below a poverty rate of 3%, countries in green) or be reduced, but not enough to fulfill SDG1 (countries in yellow). With the exception of Belize, Venezuela, Papua New Guinea and Yemen, all countries which are expected to have increasing trends in poverty rates until the end of the coming decade according to current projections are Sub-Saharan nations. Our projections indicate that 23.4% of the population living in extreme poverty in 2030 will be in Nigeria (as compared to 16% in 2020), and 13.9% in Democratic Republic of Congo (as compared to 10.7% in 2020). The highest projected poverty rates in 2030 are for South Sudan, Central African Republic and the Republic of the Congo, with shares of population living in extreme poverty of above 65%.

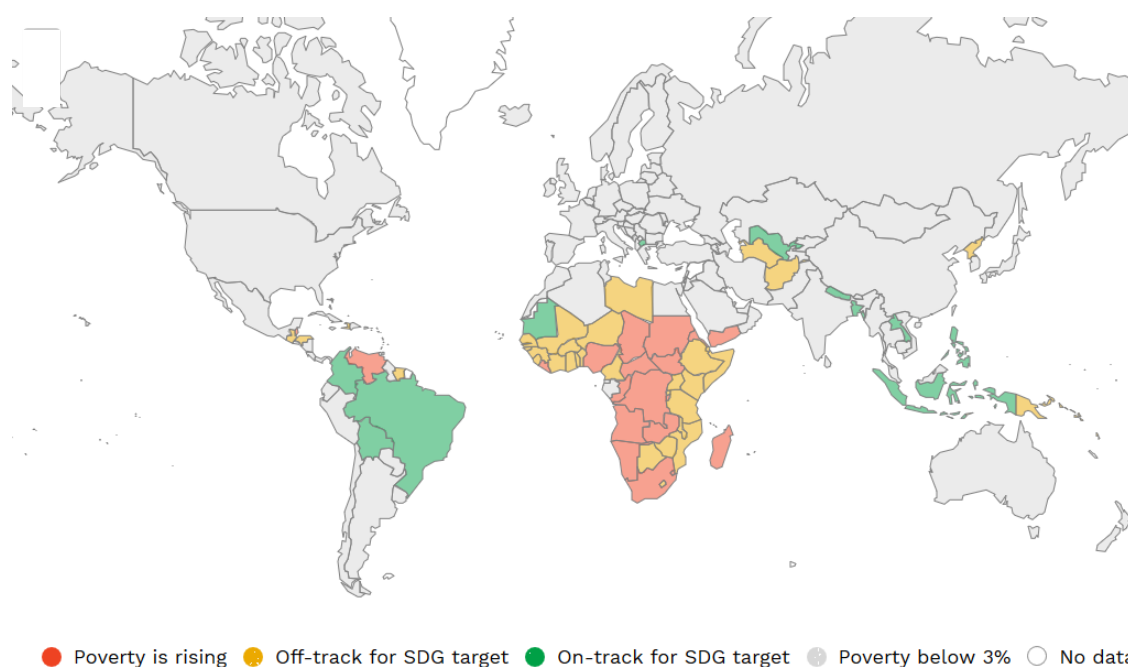


Figure 2: Classification of countries by projected poverty changes (2020-2030), visualization by The World Poverty Clock (<https://worldpoverty.io>)

For countries for which subnational poverty data are available, a more detailed assessment of the differential poverty dynamics across subnational regions can be carried out by incorporating projections of income per capita at the regional level. Figure 3 presents the same categorization as Figure 1, but for subnational poverty projections for Kenya. The heterogeneity of poverty dynamics across subnational regions is evident from the figure. Parts of the country are projected to reduce poverty systematically at a speed that would see extreme poverty eradicated by 2030 (in particular, in regions around Nairobi), while the region of Mandera, which currently hosts around 8% of the Kenyan population in extreme poverty, is expected to see poverty rates increase in the coming decade.

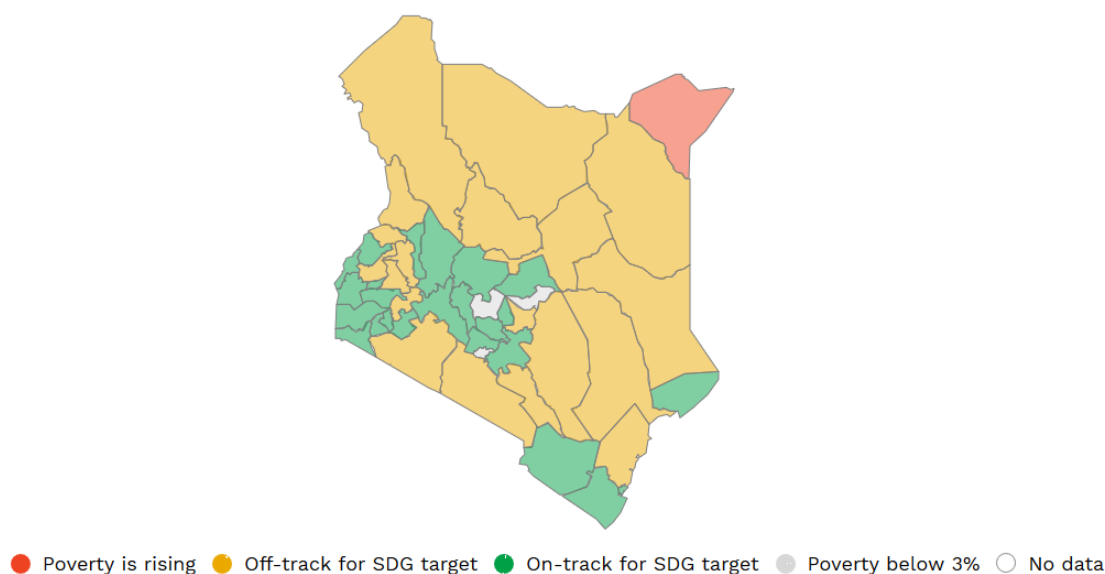


Figure 3: Classification of regions in Kenya by projected poverty changes (2020-2030), visualization by The World Poverty Clock (<https://worldpoverty.io>)

4. CONCLUSIONS

The necessity of monitoring progress in the fulfillment of SDG1 implies that new methods to assess and project poverty dynamics at the global level need to be designed in the context of the “data revolution” that was called for in the framework of the adoption of the SDGs (United Nations, 2013). In this note, we present the main features of a novel econometric tool aimed at creating nowcasts and projections of poverty up to 2030. Our results indicate that poverty reduction trends at the global level are expected to continue over the coming years, but that Sub-Saharan countries face large obstacles to fulfill SDG1. The econometric tool developed here can be also used to evaluate potential counterfactual poverty trajectories based on different human capital accumulation paths and provides an analytical framework that can be used to inform development policy at the global level. In particular, the effect of different educational policy options in reaping the economic growth benefits of the demographic transition in developing economies can be easily integrated in this modelling framework (see Lutz et al. 2019).

REFERENCES

- Crespo Cuaresma, J. (2017). Income projections for climate change research: A framework based on human capital dynamics. *Global Environmental Change*, 42, 226-236.
- Crespo Cuaresma, J., Fengler, W., Kharas, H., Bekhtiar, K., Brottrager, M., & Hofer, M. (2018). Will the Sustainable Development Goals be fulfilled? Assessing present and future global poverty. *Palgrave Communications*, 4(1), 1-8.
- Dellink, R., Chateau, J., Lanzi, E., & Magné, B. (2017). Long-term economic growth projections in the Shared Socioeconomic Pathways. *Global Environmental Change*, 42, 200-214.
- K.C., S. & Lutz, W. (2017). The human core of the shared socioeconomic pathways: Population scenarios by age, sex and level of education for all countries to 2100. *Global Environmental Change*, 42, 181-192.

- Lutz, W., Cuaresma, J. C., Kebede, E., Prskawetz, A., Sanderson, W. C., & Striessnig, E. (2019). Education rather than age structure brings demographic dividend. *Proceedings of the National Academy of Sciences*, 116(26), 12798-12803.
- United Nations (2013) *Communiqué, meeting of the high-level panel of eminent persons on the post-2015 development agenda in Bali, Indonesia, 27 March 2013*, United Nations.