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A broader perspective on African migration – adding migration to the climate-food nexus

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Data on migration shows Europe to be an important destination for people from certain African countries, alongside large intra-African movement of people. We explore what this migration means economically for populations in both host and source regions while not losing sight of the other key global challenges as captured by the SDGs. By building on a full-fledged SSP2 scenario (the business-as-usual scenario in climate change assessments) this study is the first step of towards explicitly including migration in ex-ante analyses on the climate-food nexus.

INTRODUCTION

International migration makes the headlines on an almost daily basis and from often contrasting perspectives. Turning the page in a newspaper can take you from a portrait of victims of dangerous illegal migration routes to politicians trying to sway voters with draconian measures to keep all migrants out. While international migration is slowly rising as a percentage of the global population, from 2.9 in 1990 to 3.4 percent in 2017[1], the continuing growth of the global population implies an ever increasing number of people are crossing borders in search of a better life.

While the challenge to feed an ever growing global population features prominently in nutrition security and climate mitigation discussions, international migration is generally not accounted for in underlying macro analyses (Wheeler and Braun 2013). Most global models (implicitly or explicitly) assume that while labour can move between sectors in a country it cannot cross national borders. Adding migration, however, may add new insights in the search for a pathway to sustainable food and nutrition security.

The price of food plays a central role in these discussions - with globally sufficient food available to feed all, access to food becomes the key determinant of food and nutrition security. The public and policymaker opinion on whether high food prices are good or bad for the poor has swung during recent food price spikes (see for an analysis of this swing Swinnen 2010). Most analyses stemming from a climate or agricultural production perspective align with the current public opinion, assuming that high food prices harm the poor. As Hertel (2016) argues, such analyses focus on the price effect of higher food prices while ignoring the income effect. The latter implies that a (sustained) high price of food will stimulate agricultural investments and expansion, generating new income earning opportunities that may outweigh the rising cost for net buyers of food. The net impact of high food prices for the poor thus becomes an empirical question, depending on the net impact of the price and income effect which will vary by part of the population. Heady and Martin (2016) address these conflicting views, finding empirical support that sustained high food prices have benefitted the poor in the past.

Unskilled (farm) labour wages play a key role in observed positive income effects for the poor from past (sustained) increases in food prices (Headey and Martin 2016). Although not explicitly addressed by Headey and Martin, the source of the higher food prices plays a critical role. If food prices rise due to production lagging behind population growth, the per-capita income growth will not outweigh the food price increase (Kuiper et al. 2017). The analysis by Kuiper et al. (2017) however does not account for international migration which may moderate national differences in labour supply growth (income effect), available income through remittances (income effect), consumption demand (price effect) and agricultural

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production possibilities with climate change (price and income effect). Accounting for migration in long run foresight studies thus not only addresses a highly relevant global topic in itself, it also enhances the understanding of how opposing income and price effects play out in search of a pathway to sustainable food and nutrition security for example in the context of reaching the Sustainable Development Goals (SDGs).

This study explores how accounting for migration affects a food system assessment in a commonly used forward looking analysis for sustainable food and nutrition security. We focus on international migration in Africa and between Africa and Europe. Africa is projected to remain the fastest growing continent in any of the UN population projections (United Nations 2017) which will highlight the impact of allowing for migration in the projections. While the majority of Africans migrate within the continent, Europe is an important destination for those that leave Africa (ECA 2016). Europe also provides a contrasting case in that here population growth is very low and population in some regions may even decline, thus highlighting the role of migration in aging societies.

METHODOLOGY

The study uses MAGNET (Modular Applied GeNeral Equilibrium Tool), a multi-sector, multi-region Computable General Equilibrium model of the world economy (Woltjer et al., 2014). MAGNET has been widely used to simulate the impacts of agricultural, trade, land and biofuel policies on the global economy, as well as for long-term projections of food and nutrition security. MAGNET builds upon the GTAP model (Hertel, 1997) so as to make it suitable for in-depth analyses in the energy-food-climate nexus, characterised by competing demands from food, feed and biofuels and their impact on food and nutrition security. The MAGNET extensions have been added in separate modules to the GTAP core, which can be switched on or off depending on the policy question at hand, making MAGNET particularly flexible for use in applied policy analyses.

Recent developments of MAGNET focus on further strengthening its capacity to analyse the SDGs in a coherent framework, identifying synergies and trade-offs between for example food and nutrition security and climate objectives. As part of enhancing MAGNET's ability to address the global challenges a new module will be added to capture international migration. This module will be based on the existing GMIG model (Walmsley, Winters, and Ahmed 2007). Including the GMIG extensions to the standard GTAP model as a module in MAGNET allows us to account for migration in any future MAGNET application.

SCENARIOS

We use the modular set-up of MAGNET to compare the impact of allowing for migration in a Shared Socio-Economic Pathway 2 (SSP2) scenario (O'Neill et al. 2013). We run the same scenario twice with the exact same model set-up, apart from the activation of the migration module. The standard SSP2 baseline does not allow for migration and can be taken as a counterfactual where policy-makers have managed to effectively eliminate all migration flows. The migration-SSP2 scenario then introduces the possibility of labour flows while keeping all scenario drivers the same.

MAGNET yields a wide range of metrics to assess the performance of the food system in these contrasting set-ups, both in terms of impact on natural resources (changes in agricultural land use, emissions), food and nutrition security (calories, macro and micro-nutrients, adherence to food based dietary guidelines) and a dedicated set of SDG indicators. Including metrics based on SDG indicators in an ex-ante framework like MAGNET has two key advantages: (i) providing continuity by allowing for comparisons between historical, current and future estimates of the same set of FNS metrics and (ii) increase communicability, by structuring the output of the complex ex-ante modelling systems using metrics already familiar to policy makers. MAGNET provides metrics at global and national level, and for household types in selected regions. A combination with meso- and micro level analyses is needed to do justice to the variability across populations, regions and sectors when assessing health and sustainability impacts.

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