



## Sub-Saharan Africa's international migration and sustainable development under climate change

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In climate change, migration from sub-Saharan Africa (SSA) would affect socio-economic development in SSA and Europe. However, empirical evidence is unclear about the role of international migration in achieving sustainable development. This article first attempted to study the migration patterns and determinants between 1995 and 2020. Sustainability index and regression models were built to estimate the cascading effects of international migration on expatriates and asylum seekers in SSA or Europe and the feedback effects on SSA's sustainable development. In particular, SSA asylum seekers into 14 European countries (EURO-14) were investigated for their push-pull factors and impacts on the socio-economic development of EURO-14. Results show that the international migration was primarily intra-SSA to low-income but high-population-density countries. Along with increased sustainability scores, international migration declined, but emigration rose. Climate extremes tend to affect migration and emigration but not universally. Dry extremes propelled migration, whereas wet extremes had an adverse effect. Hot extremes had an increasing but insignificant effect. SSA's international migration was driven by food insecurity, low life expectancy, political instability and violence, and high economic growth, unemployment and urbanization rates. The probability of emigration was mainly driven by high fertility. SSA's international migration promoted asylum seeking to Europe, with the diversification of origin countries and a motive for economic wellbeing. 1% more migration flow or 1% higher probability of emigration led to a 0.2% increase in asylum seekers from SSA to Europe. Large-scale international migration and recurrent emigration constrained SSA's sustainable development in terms of political stability, food security and health. Regarding the asylum seekers to Europe, political instability and violence of SSA were major pushing factors while high GDP per capita, low unemployment, and ageing populations of EURO-14 were major pulling factors. Development aid reduced the outflow from SSA, whereas common colonial language and migrant networks facilitated the immigration to the EURO-14. The immigration from SSA did not affect the political stability of EURO-14. In contrast, economic development was promoted by settled migrants but hampered by asylum seekers. Overall, climate change is one factor of many but not the dominant. It might gain more weight if climate change accelerates. These findings can inform policymakers of countries that continue to improve development aids, food security and political stability in SSA while promoting the integration and inclusion of immigrants in Europe for better

migration management and planning towards sustainable development, besides mitigating climate change.