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Scientific Group Report Summary

ACHIEVING ZERO HUNGER BY 2030: A REVIEW OF QUANTITATIVE ASSESSMENTS OF SYNERGIES AND TRADEOFFS AMONGST THE UN SUSTAINABLE DEVELOPMENT GOALS

by

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The Sustainable Development Goal 2 “Zero hunger” (SDG2) sets clear global targets for ensuring access to sufficient food and healthy nutrition for all by 2030, while ensuring sustainable food production systems and protecting livelihoods. Yet, the current trends show the level of challenge ahead, especially as the COVID-19 pandemic worsens global development prospects. Intrinsicly, SDG2 presents some points of tension between its internal targets and brings some synergies but also strong trade-offs with other sustainable development goals.

The global modelling literature that are the subject of this review has explored the main relations between SDG2 targets and other critical development goals and quantified the SDG interactions around “Zero hunger”. Such analyses typically involve economic, land balance, and economic modelling approaches – both partial and general equilibrium – as well as integrated assessment models. All these tools can be used to project socioeconomic and environmental indicators at different levels of scale and globally.

SDG2 integrates several ambitious objectives that will require careful implementation to leverage potential synergies. Target 2.2: fighting malnutrition requires going beyond the traditional analyses of sufficient food provision (Target 2.1: no hunger) by also accounting for macro and micronutrient deficiencies and monitoring the prevalence of obesity (triple burden of malnutrition). Targets 2.3-2.5 put more emphasis on production methods, with a particular focus on smallholder yields and income, and greater sustainability in management, as well as diversified

crops. Based on our review of model results, we find that the compatibility of these objectives will depend on the interplay of future food demand drivers (population, income, dietary transition, food waste, globalization) and the capacity to maintain productivity improvements across the food system while relying on more sustainable practices (sustainable crop intensification, integrated livestock management, efficient water and nutrient use).

Taking a broader perspective across the full SDG space reveals strong synergies with other basic subsistence goals. In particular, Goal 1: No poverty is central for food security and can unlock many additional benefits across SDGs. Market equilibrium analyses as well as microsimulations at the household level highlight the importance of income growth and food price moderation for the “access” pillar of food security. Furthermore, SDG2 is closely integrated with Goal 3: Good health and well-being, due to the close link between malnutrition and maternal and child health, as well as the prevalence of diet-related mortality risk. A large number of other socioeconomic SDGs have been shown to be key enablers for SDG2, including: education (SDG4), gender equality (SDG5), decent work and economic growth (SDG8), reduced inequality (SDG10), sustainable cities and communities (SDG11), peace, justice and strong institutions (SDG16), and partnership for the goals (SDG17). However, these potential synergies have received little attention in the global quantitative assessments to date and will require closer attention in the future.

Growing more food for SDG2 will pose important challenges for the success of many environmental

SDGs. Quantitative analyses show that agricultural production is substantially contributing to the risks of exceeding critical global sustainability thresholds in the domain of global warming, nutrient pollution, water quantity and quality, biodiversity loss and land degradation. Specifically, several important SDGs have been shown to compete directly with SDG2 through their common demands for scarce land and water resources. Climate action (SDG13) will require reducing or adapting production of greenhouse gas intensive products (meat and dairy, rice), achieving biodiversity on land (SDG15) will require further efforts to limit deforestation associated with agriculture expansion, as well as establishment of new conservation areas, environmental water flows (SDG6) will require decreasing water withdrawal for irrigation. Human needs will also compete with more land demand for Clean and affordable energy (SDG7) and for infrastructure (SDG9) and cities (SDG11). Quantitative assessments show more efficient production

systems and technologies, pricing of externalities, and integrated resource management can mitigate some of these tradeoffs, but are unlikely to succeed in resolving these altogether.

In the face of all these challenges, forward-looking analyses indicate that deeper transformations of global food systems, combining both supply-side and demand-side measures, will be required to simultaneously achieve SDG2 targets and other goals. These will entail new supply-side investments, smoothly functioning trade and effective markets, as highlighted in the Targets 2.a-2.c, as well as modified consumer behavior, with a transition towards more sustainable and healthy diets and sharp reductions in food losses and waste. These collective food system transformations highlight the importance of SDG12: Responsible production and consumption, as a key supporting goal for the successful evolution of global food systems towards SDG2.

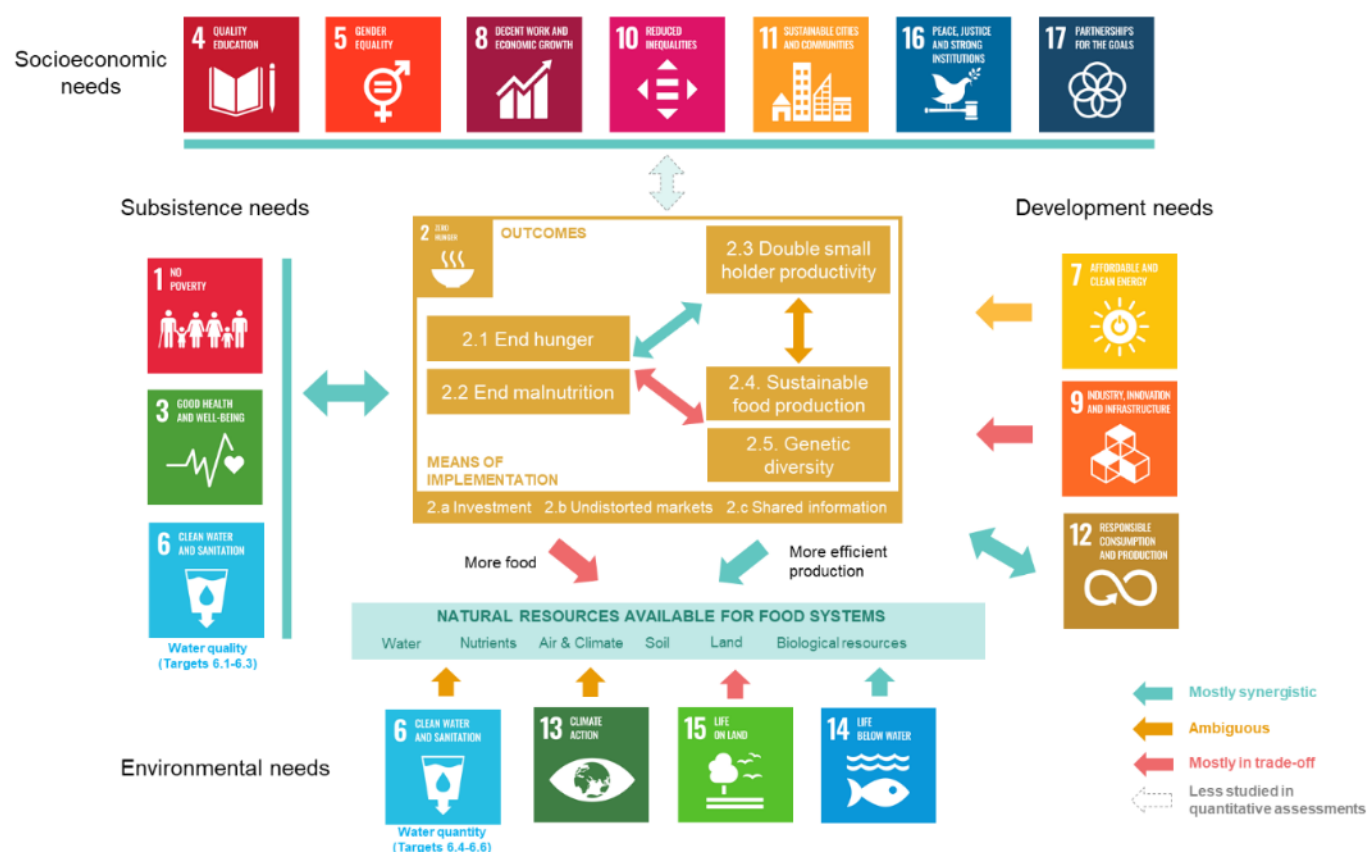


Figure 1. SDG2, its targets and relations to other SDGs based on findings from modelling studies, as analyzed in this review.

For a full description of SDG2, see the UN official website at <https://sdgs.un.org/goals/goal2>

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