Relationship between green energy and SDG2

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Make today matter

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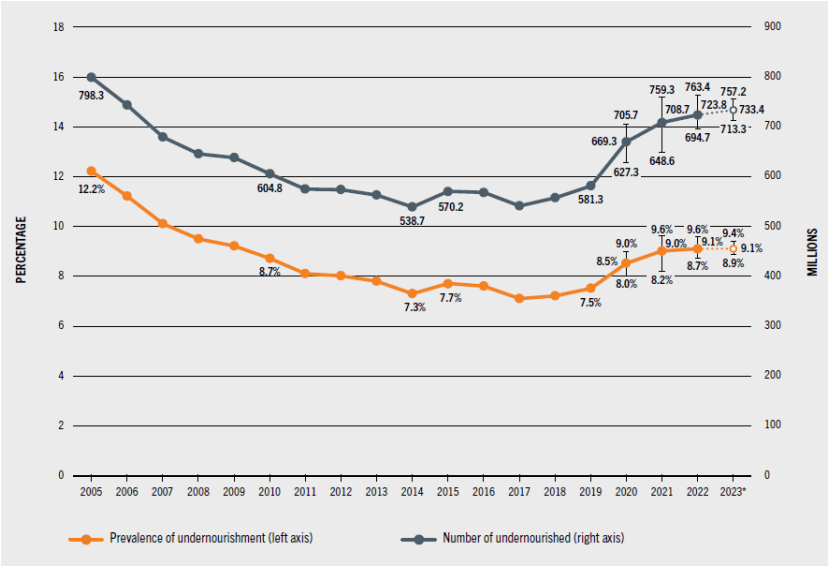
SDG 2: Zero hunger

Aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture by 2030



The State of Food Security and Nutrition in the World, 2024

- Global hunger has persisted at nearly the same level for three consecutive years, still affecting 9.1 % of the population in 2023 compared with 7.5 % in 2019
- This is about 152 million more people than in 2019
- Africa remains the region with the largest estimated proportion of the population facing hunger – 20.4 %

Food insecurity

Going beyond hunger, the prevalence of moderate or severe food insecurity remains above pre-pandemic levels, with little change in four years

2023 → 2.33 billion people (28.9 %)

moderately or severely food insecure meaning they did not have regular access to adequate food posing grave risks to their health and well-being

SOFI (2022, 2023, 2024)

Double burden of malnutrition

Children under 5

- 45 mil wasted (6,8%)
- 148 mil stunted (22,3%)
- 37 mil overweight (5,6%)

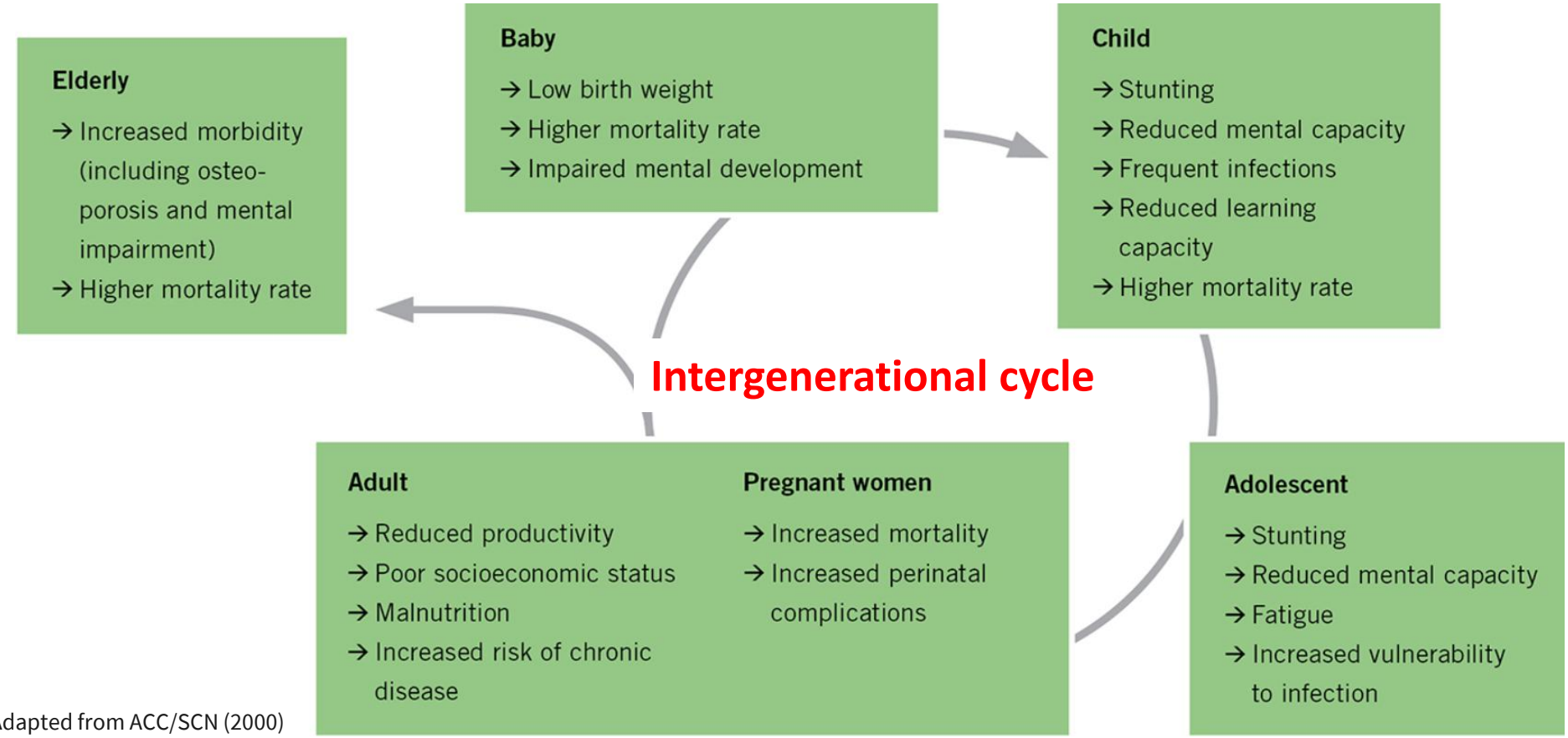
Children 5-19 and adults 18+

- 10.6% severe food insecure
- 15,8% obese adults
- 30% anaemia in women
- 74% of all deaths due to NCDs

The world is not on track to achieve the associated 2030 targets, and neither is any region on track to attain the 2030 target for low birthweight

SOFI (2022, 2023, 2024)

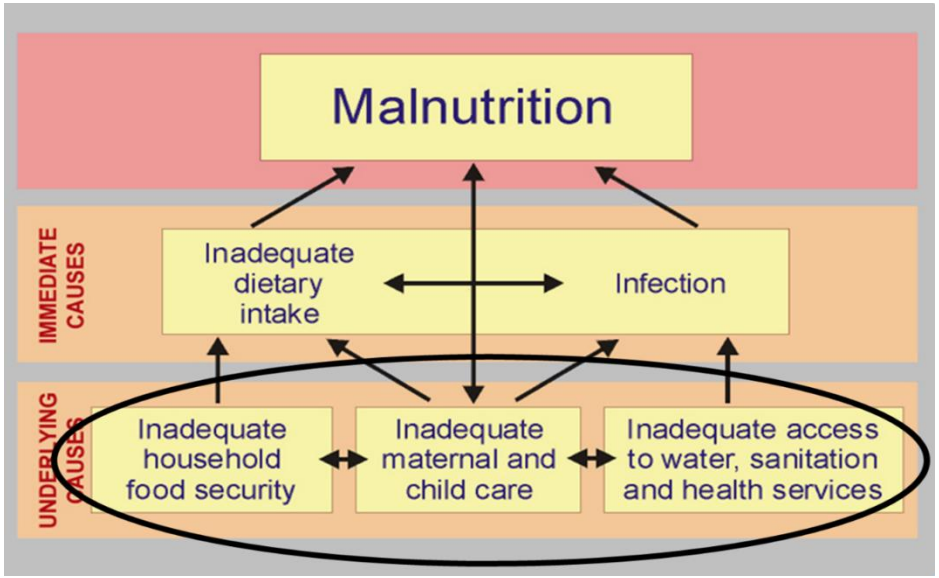
Consequences of micronutrient deficiencies throughout the lifecycle



Adapted from ACC/SCN (2000)

Hidden Hunger

Causes include poor diet, disease, or increased micronutrient needs not met during pregnancy and lactation



Enough food & energy

Enough nutrients

Sustainable agriculture

“the efficient production of safe, high-quality agricultural products, in a way that protects and improves the natural environment, the social and economic conditions of farmers, their employees and local communities, and safeguards the health and welfare of all farmed species”

(Buckwell et al., 2015)

It is imperative to consider sustainability when addressing healthy diets because the environment and health are interlinked in the context of food

Food Lost and Waste

Food Waste

Of the staggering 1.2 billion tons of food that were lost in 2019, approximately 22 % was concentrated in low-income food-deficit countries, indicating a widening food supply gap for large segments of vulnerable populations.

Energy-inefficient

Agri-food production in many developing countries

The sector remains heavily reliant on fossil fuels, with recent studies estimating that food systems account for at least 15 % of global fossil fuel use

Powering Agriculture

To increase agricultural productivity, energy is needed for

- **Agronomic activities - land cultivation, planting, irrigation**
- **Livestock feeding and caring**
- **Processing activities such as drying, milling, pasteurising**
- **Cooling and cold chain food storage, distribution, and sales of nutritious food**

Impacts:

- **Increasing agricultural yields**
- **Expanding available markets**
- **Increasing sustainability**
- **Increasing food producers' incomes**

Thereby empowering the agricultural sector to service local and international food and nutrition goals

Climate environment

Decarbonizing the energy structure by switching to the usage of low-carbon energy sources helps improve the climate environment resulting in increased food production and decreased food waste

- **For example, climate change might lead to a more than 10% reduction in maize and sorghum yields in South Asia, which could be avoided by decarbonizing the energy supply**

Powering Nutrition

Support consumption of fresh, nutritious and diverse foods vs common grain-based diets

Electrified cold chains – storage, processing, packaging and distribution

95% of staple food needs to be cooked before they can be eaten

Clean cooking

Reduce air pollution

Reduce labour time to collect cooking fuels

Makes the preparation of more nutritious food that needs to be cooked for a long time (e.g. beans) more likely

Negative impact

- **Operational requirements compete with the agricultural sector for natural resources such as water, minerals and land use**
- **Hydropower may interfere with agricultural irrigation; in the dry season**
- **Bioenergy - energy farming may occupy agriculturally viable land**
- **The renewable energy conversion processes are likely to cause damage to the biodiversity of surrounding areas (*ie* natural wildlife and plants)**
- **Competes with land availability due to renewable energy installations**

Business models

Critical to have:

- **Comprehensive business models that leverage technological innovation to add value to farming**
- **Generating more data that allows governments (agriculture and energy ministries alike) best to identify the right power solution for a given context**

Consider the question of irrigation: there are many initiatives promoting solar irrigation that have struggled to reach commercial scale. This is, in part, because it is rare that pump providers truly know where their customers are. Important to map farmer location, infrastructure (water line and electricity connection), crop type, irradiance (i.e. Sunshine maps).

Concluding remarks

- **The transformation of local agriculture supply chains would reduce food and fuel imports, meaning more value is retained locally and reinvested to start a virtuous cycle of economic growth**
- **Adoption of energy-efficient practices in agriculture, enabled by clean and affordable energy, can improve countries' food security and resilience by increasing productivity and market access for agri-food producers and reducing post-harvest losses**
- **The enabling and inhibiting relationships between renewable energy sources and the SDGs identified provide a step toward the information needed to develop climate policy and associated action plans**

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