The 21st-century great food transformation

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Civilisation is in crisis. We can no longer feed our population a healthy diet while balancing planetary resources. For the first time in 200 000 years of human history, we are severely out of synchronisation with the planet and nature. This crisis is accelerating, stretching Earth to its limits, and threatening human and other species' sustained existence. The publication now of Food in the Anthropocene: the EAT–*Lancet* Commission on healthy diets from sustainable food systems[1] could be neither more timely nor more urgent.

The dominant diets that the world has been producing and eating for the past 50 years are no longer nutritionally optimal, are a major contributor to climate change, and are accelerating erosion of natural biodiversity. Unless there is a comprehensive shift in how the world eats, there is no likelihood of achieving the Sustainable Development Goals (SDGs)—with food and nutrition cutting across all 17 SDGs—or of meeting the Paris Agreement on climate change.

The EAT–*Lancet* Commission addresses the need for a new universal healthy reference diet based on indepth nutritional analyses and presents a comprehensive scientific framework that defines sustainable planetary boundaries for such food systems—together forming the Great Food Transformation. The result of more than 2 years of collaboration between 37 experts from 16 countries, the Commission is informed by a range of disciplines, including health, nutrition, environmental sustainability, food systems, and economic and political governance. The Commission's definition of a healthy reference diet was calculated through analysis of food groups, with appropriate ranges proposed for essential daily intake that would lead to optimal health and wellbeing and to reducing premature deaths worldwide by 19–23%. The dietary shift that is needed requires a dramatic reduction of consumption of unhealthy foods, such as red meat, by at least 50%, with a recommended daily combined intake of 14 g (in a range that suggests total meat consumption of no more than 28 g/day), with variations in the change required according to region. At the same time, an overall increase in consumption of more than 100% is needed for legumes, nuts, fruit, and vegetables, with the changes needed again varying according to region. The Commission sets out comprehensive, multisectoral policy actions and recommendations that will support these shifts. The planetary boundaries defined by the Commission are categorised by the six environmental systems on which food systems and the way we eat have the greatest impact: climate change, biodiversity loss, land-system use, freshwater use, and nitrogen and phosphorus flows. For each of these, the Commission outlines a safe operating system and upper-limit boundaries within which food systems must remain to avoid potential ecological catastrophe.

The human cost of our faulty food systems is that almost 1 billion people are hungry, and almost 2 billion people are eating too much of the wrong food. The Global Burden of Disease Study indicates dietary factors as a major contributor to levels of malnutrition, obesity, and overweight—all of which have become more prevalent since the SDGs were adopted—the burden of non-communicable diseases is increasing, and unhealthy diets account for up to 11 million avoidable premature deaths per year.[2]

How is it that have we evolved to eat so unhealthily, both for our bodies and for the planet? In 2007, *The Lancet* published a Series on Energy and Health that assessed the range of food and agricultural energy issues that contribute to climate change, including meat consumption.[3] But in the decade since then, the depth of the damage our diet causes has intensified. Agricultural production is at the highest level it has ever been, but is neither resilient nor sustainable,

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and intensive meat production is on an unstoppable trajectory comprising the single greatest contributor to climate change. Industry too has lost its way, with commercial and political interests having far too much influence, with human health and our planet suffering the consequences.

Humanity's dominant diets are not good for us, and they are not good for the planet. The transformation that the EAT–*Lancet* Commission calls for requires a focus on complex systems, incentives, and regulations, with communities and governments at multiple levels having a role in redefining how we eat. For policy makers, the changes are not limited to agricultural policy: there needs to be integration, teamwork, and cooperation between bodies responsible for health, transport, agriculture and environment, trade, and education, with the knowledge that climate change driven by food production adds urgency to the task ahead. Our connection with nature holds the answer, and if we can eat in a way that works for our planet as well as our bodies, the natural balance of the planet's resources will be restored. The nature that is disappearing holds the key to human and planetary survival.

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1 Willett W, Rockström J, Loken B, et al. Food in the Anthropocene: the EAT–*Lancet* Commission on healthy diets from sustainable food systems. *Lancet* 2019; published online Jan 16. http://dx.doi.org/10.1016/S0140-6736(18)31788-4.

2 GBD 2017 Risk Factor Collaborators. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018; **392:** 1923–94.

3 McMichael AJ, Powles JW, Butler CD, Uauy R. Food, livestock production, energy, climate change, and health. *Lancet* 2007; **370:** 1253–63.