

Gastronomy and climate change

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Whether the best wine and oil come from the Mediterranean areas of the planet, whether potatoes are as important a staple in the Andes as they are in the Alps, whether the coffee plant only grows between the Tropic of Cancer and the Tropic of Capricorn and no further, and whether swordfish are not caught in the North Sea is ultimately a matter of climate. Each species has evolved by adapting to a specific climate, and therefore to specific patterns of temperature, humidity, rain and wind, and to changes in this pattern over the year, the seasons. Every food system and food are the result of human action based on the conditions imposed by the climate and the species that have adapted to that climate. Fisheries, agriculture, hunting, fermentation and processing processes, livestock systems, are all formed from climatic conditions and depend on the dynamic stability of these

conditions. Food systems are also based on biodiversity and ecological processes that provide what are known as ecosystem services, for example pollination, soil fertility and carbon sequestration. These ecosystem services are provided by species and their interactions, and are therefore also embedded in and dependent on climatic conditions and their relative stability.

The rapidly evolving, anthropogenic climate change underway (2021) is breaking the 'threads' of both the planet's ecological fabric and its associated food systems and gastronomic heritages. Human activity, based on exponential population growth, increasing per capita consumption of all kinds of resources, and the use of fossil fuels, is unravelling what ecological processes had generated over millions of years: to maintain a carbon dioxide rate in the atmosphere, and thus a global average temperature as favourable as possible to life itself, by storing carbon dioxide in the trunks of ancient forests (coal), in phytoplankton and zooplankton buried at the bottom of the sea (oil), in the calcium carbonate structure of coral reefs, or in the undecomposed organic material of peatlands and soil under permafrost. There is no corner of the planet that does not feel the consequences of this sudden (in geological terms) increase in carbon dioxide in the atmosphere, no species that is not affected by these changes. With this in mind, it is almost trite to say that climate change has and will have profound effects on food systems around the world, and on the food we eat and will eat.

Climate change is manifesting itself in diets, practices and food traditions in every corner of the planet, and will increasingly manifest itself by putting production and economies at risk, requiring resilience and flexibility from all actors involved. Seeking a synthesis of the multiple effects involved, we can say that climate change impacts:

- 1) ecosystems, with loss of their capacity to create biomass and thus to produce food (example of the reduction of Antarctic krill and the impact on the oceanic trophic chain);
- 2) on the geographical distribution of crops and species that are hunted and fished (examples of future scenarios in relation to olive oil production in the Mediterranean basin, the increase in the price of Japanese squid as a result of their displacement deep into the Pacific, and the impact on the Senegalese coastal economy of the displacement of sardines offshore);
- 3) on traditional products and gastronomy, including the transformation processes associated with them (examples of lambic beers, whose spontaneous fermentation is

threatened by rising temperatures, and of ice cellars used as warehouses for Alaskan Inuit whale meat).

Communities, populations, farmers, livestock breeders and fishermen are already coping with the effects of climate change, adapting their practices and activities to a rapidly changing context as far as possible. Thus, Tunisian fishermen have turned the invasive blue crab into a national export item, Andean farmers are moving their potato fields higher up, mountain beekeepers are adapting the positioning of their hives to the upward shifting blooms from generation to generation, and nomadic reindeer herders in the Eurasian tundra are learning to recognise and avoid areas of melting permafrost with their herds.

These adaptations, and the flexibility that allows them, must be supported because they underpin the resilience that food systems will need to cope with ongoing changes. Consumers, all of us, can cultivate this resilience and flexibility by introducing into our diets the new species and foods that climate change will bring, for example by adapting fish consumption to the increasing species in the so-called tropicalisation of the Mediterranean, while policy can accompany this process with ad hoc laws and regulations that keep pace with change (e.g. plaice fishing along the Atlantic coast of the United States).

Although climate change is a global problem, solutions and adaptations to it in terms of food and food systems should be local, multifaceted, and based on the diversity of foods and their sustainable production. What climate change and its often disastrous effects are showing us is that we are not masters of anything, not of our own destiny and not of the planet we inhabit, nor have we ever been. Instead, we are dependent on every other species, on the rest of the life that inhabits the planet, and it is only by accepting this dependence, by re-tuning ourselves to the rapidly changing ecologies of the planet, that we can ride the wave without being swamped.

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