

Climate change is about emissions from fossil fuels—but it is also about emissions from food. While we discuss the contribution of the energy system to climate change, we do not talk enough about the other elephant in the room: agriculture and the food we eat.

This is because more than any other economic sector, agriculture creates a divide between the world that emits for survival and the one that emits for luxury. As the world begins to rework the paradigm of agriculture so that it is climate-smart, we need to reset this connection between food and livelihood, nutrition and nature.

In 2018, some 11 per cent of the global greenhouse gas emissions were from the food the world produced. Of this, the bulk of the emissions (roughly 40 per cent) were from enteric fermentation in the digestive system of ruminant livestock; food-producing animals emit methane, which is a powerful greenhouse gas. Another 26 per cent of the agriculture-related emissions were nitrous oxide from livestock manure applied in fields or dumped. Synthetic fertilisers used on crops then added 13 per cent nitrous oxide and methane emissions from rice cultivation

contributed 10 per cent of the total agriculture-related emissions.

But the fact is that there are two distinct agricultural worlds. One, based on the industrial agriculture model where food is manufactured in factory farms; the size of

Foreword

SUNITA NARAIN

animal holdings and the amounts of chemical inputs used to produce such food is massive. This intensive food farming system has an ownership pattern, which differs from the subsistence agriculture of the other world.

Farmers in this other world have small landholdings. They grow food for their consumption and for their livelihood, and keep a few cattle or other animals in homestead farms. India, for instance, has the distinction of having the world's largest livestock population which is also in the hands of very small farmers. Livestock contributes 25-50 per cent of an individual farmer's income, according to official data. It is thus crucial for their economic security. This is the same when it comes to rice production; it is grown by small farmers and we cannot discount the role of rice in nutrition and livelihood for millions in this (our) world.

Remember, in our world a multifold crisis threatens the very survival of farmers. They are the first victims of climate change impacts. They are being hit again and again by extreme weather events; their crops

are lost to floods, droughts, pest attacks and unseasonal cold and heat. Second, the increasing cost of agricultural inputs and the lack of public infrastructure, including for irrigation, hits their livelihood. Third, food costs are unaffordable to most consumers, and farmers lose out when governments step in to import food from intensive farming systems that are also invariably subsidised.

We, therefore, need to discuss agriculture and climate change in the differing contexts of the two worlds. For this we need to confront the beast of intensive food farming systems, which are also linked to the excessive eating of meat, in the other world. Today, the vast proportion of food that is grown is not for humans, but to feed livestock.

Of course, action is not easy. The Netherlands government learnt this when it decided to cut nitrous oxide emissions, which would require farmers to drastically reduce livestock, convert to “green” farms or shut down. It led to widespread protests, which then contributed to the fall of the government. New Zealand, where cows are highly productive and contribute almost half of the country’s greenhouse gas emissions, has proposed a “burp” tax—farmers would have to pay based on the numbers of cattle and feed. But there is opposition as this would invariably lead to lower cattle numbers for farmers. So, the tax has been deferred. The meat interests are as powerful as the fossil fuel industry, if not more so.

The fact is that we cannot go ahead with this model of agriculture in a climate-risked world. This is where farm and food of our world—countries like India—provide answers to the future. We have, as yet, in most parts not moved to a highly input intensive model of livestock production. Most dairy farmers are still individuals. Their farms are based on agro-silvopastoral systems. So, what then should be the elements of the agricultural model for security of livelihood, nutrition and nature in our climate-risked world?

First and foremost, it has to be based on low-input so that it protects the farmer from multiple risks. This will put more money in the hands of farmers, particularly, as we know that the high cost of food is unaffordable for most countries. It is also clear that low-input agriculture is not necessarily lower in productivity. The conventional strategy—even what is being promoted in the name of smart agriculture—depends on high-quality and high-cost inputs, which adds to the cost of cultivation. The argument is that this will lead to higher yields, which will give the farmer higher income. But this only works if the costs do not wipe out the profits. In the case of smallholder farmers, where there is little economy of scale, this is just not possible.

Second, increasing yields will need working on the health of the soil and in providing irrigation to farmers when they need it most. We know

by now that climate change will bring new pests for farmers—this makes it all the more important for agriculture to be resilient; but this does not mean increasing the use of pesticides. It can and must mean changes in practices of agriculture as well as the use of non-chemical alternatives. The bottomline is that resilience requires more ability to cope; recover; and this means higher returns in the hands of farmers. This also means investing in markets that will provide opportunities to farmers to maximise gains.

Third, agriculture has to be built on the principle of risk minimisation. This would mean promoting multiple cropping systems; these cropping systems will also promote biodiversity as farmers would grow more than one crop. This is why livestock economy is integral to agriculture—it allows for management of risk so that there is income from different sources. Think of it like the diversification of investment portfolios, which bankers would advise you in these times of uncertainty.

Fourth, it must include crops that are both nutritive and compatible with the local environment. In other words, where there is water shortage, farmers should grow crops like millets that are water prudent. But this choice is not in the hands of the farmer. Governments must enable policies that will promote growing of these crops—from procurement to price. For instance, more biodiverse and climate-appropriate millets will be grown by farmers where governments have included them in the schemes for mid-day meals (this is one of India's most important programmes as it aims to provide hot-cooked food in every school). Change of cropping patterns towards climate-resilience will need this supportive structure.

Fifth, and perhaps, the most critical element, is that the choice of food that farmers grow is in the hands of consumers—us; what we eat; and why we eat it. If we change our diets, it provides signals to the farmer to grow differently. We know that food is medicine; yet we continue to eat wrong; eat junk. The food on our plates has lost the meaning of nutrition. We are in danger of losing the knowledge of good food—what our grandmothers and mothers cooked in different seasons. This is why we must be part of this changed agriculture story. Food cuisines are about culture and biodiversity.

Our *First Food* series brings you the colour, essence and joy of this biodiverse food that is good for nutrition and nature. The climate change crisis is human made; it is we the humans who have contributed to the emissions that threaten our present, and the very existence of our children's future. It is we who must rework our lives; our ways of doing business. This is what we need to do to be part of the change.