Animal farms

The Green Revolution impacted livestock-rearing as well as agriculture. Farmers were encouraged to shift from low-input backyard systems to corporatised capital-intensive systems. As a result, write **Nitya S Ghotge** and **Sagari R Ramdas**, there was an artificial divide between livestock-rearing and agriculture, leading to the further crumbling of fragile livelihoods of small and landless farmers. Organisations such as Anthra are now working with communities to revitalise and re-integrate livestock and agriculture

The conventional growth pathways recommended for globalisation are in direct contrast to what is needed to cope with global warming and climate change. For the livestock sector, several international agencies predict that global demand for livestock will double during the first half of this century, as a result of growing human populations and their increasing affluence, especially in developing countries like China and India. Global trade in livestock products is already high. India is not yet a significant exporter, but sees itself as having the potential to grow in this direction.

This demands a pattern of livestock-rearing that includes vertical integration of commodities into competitive markets, and international transport of agricultural and livestock produce from areas of cheap and surplus production to centres of demand. These patterns will be disrupted in a world of diminishing fossil fuels. On the other hand, climate change will impose fresh problems such as prolonged and more frequent drought, changes in rainfall distribution, extreme weather events, rising sea levels, increased and changing pest loads, and greater risk of heat stress in livestock farming.

Livestock-rearing along with other allied activities today accounts for around 10% of India's total emissions as opposed to a world average of approximately 6%. While this is partly because India's emissions from industry are low, the country will nonetheless have to embark on a policy of livestock development that is mindful of the effects of the sector on climate.

The poor are already disproportionately vulnerable to the effects of climate change because of their greater dependence on agriculture. Food security is becoming a major issue in many developing countries including India, with food prices spiralling upwards.

According to the finance ministry's Mid-Year Review 2009-10, consumer price inflation reached 11.6% in September 2009 thanks mainly to rising food prices. Industrialised systems of livestock-rearing will also be affected as the benefits they enjoyed because of cheap energy costs and subsidies will no longer be available. The plans and polices of the past will thus no more be valid for the future.

India's livestock, by numbers

India has some of the largest livestock populations in the world. It has 57% of the world's buffalo population and 16% of cattle population. It ranks first in cattle and buffalo populations together, third in sheep, and second in goat populations in the world. Total export earnings from livestock, poultry and related products was Rs 5,120 crore in 2004-05, of which leather accounted for Rs 2,660 crore, with meat and meat products accounting for Rs 1,720 crore. The livestock sector produced 90.7 million tonnes (mt) of milk, 45.2 billion eggs, 2.12 million tonnes of meat, and 44.5 million kg of wool in 2004-05 (India is among the largest producers of milk and eggs in the world).

The development path selected 50 years ago for India drove our agriculture and livestock production systems through two predominant models: the Green and White Revolutions. The Green Revolution focused on improved seeds, irrigation, mechanisation and chemical fertilisers, and began in those areas of the country rich in natural resources. One of the results of the Green Revolution in India was displacement of the work-bullock from farming systems in these initial areas and replacing it with the dairy buffalo. What followed was the White Revolution that based its model on exotic dairy breeds, and buffalo-rearing which was based on improved fodder, increased feed, artificial insemination to upgrade our genetic material, improved health, and improved marketing. This was repeated in species after species, with mixed results.

While our cattle was replaced with the Jersey and Holstein breeds, our sheep were sought to be replaced with exotic merinos from Russia and Australia, our goats with Swiss breeds, our pigs with Yorkshires and Berkshires and our poultry with breeds that had proved successful in countries where livestock industrialisation was already under way.

Subsequently, the poultry industry took off and the dairy cooperative movement boasted a number of success stories. But there are many instances of failure too. The dismal truth in a large part of the country is the breakdown of traditional systems, loss of breeds, inadequacy of new technologies and research to address problems that challenge the poorest farmers of the country, and ultimately, the crumbling of fragile livelihoods dependent on livestock resources. One of the most devastating results was

the artificial separation of livestock-rearing from agriculture, with both becoming more and more dependent on external resources and inputs.

The expansion of these programmes to drier, more marginal areas of India has been a disaster. By the Eleventh Five-Year Plan (2007-12), the Union government began to recognise that the earlier path was not sustainable. According to a report of the Planning Commission's working group on animal husbandry and dairying, there were a number of shortcomings. For instance, the efforts made during the Tenth Five-Year Plan (2002-07) in raising feed and fodder resources for livestock were not very successful. The recommendation was to target at least 10% of cultivable land for fodder crops; however, if fodder crops compete with foodgrain (and crops for biofuel) we will face many more problems.

The push to go private

India's farming strength has been the farmer's ability to recycle crop residue to feed animals. This unfortunately has not been encouraged, with farmers being forced to grow cash crops with no edible crop residue. There are many imbalances, illustrated in the ignoring of the unorganised sector in the policy space. There have been no measures to develop the unorganised sector producing dairy products, which otherwise enjoy tremendous demand in the domestic market as well as potential for export, even though the working group stated that in the first four years of the Tenth Plan the growth rate of milk production was less than 3% per annum.

Although India's cooperative milk marketing successes are well-known, global market regimes today pose new challenges for Indian livestock products. Competition from international players, multinational corporations and large private agri-business units threaten to wipe out small producers. India's inability to meet global standards of production -- especially in terms of health of livestock and quality of livestock products -- could prove extremely detrimental to small producers. Already, poultry contract farmers are crumbling under the stress of having to produce and compete with large international poultry companies.

More worrisome is whether our livestock products are safe for consumption. Along with chemical agriculture, we also ushered in the age of chemical livestock-rearing. Antibiotics, growth boosters and hormones, anti-parasiticals, urea and other chemicals have been extensively advocated in the past to boost livestock production as well as supposedly get rid of infectious disease and infestations. Anti-parasiticals and toxic chemicals like ivermectin, butox and even DDT have been recommended to keep ticks and fleas at bay. They are often used in places where animal feed is stored, to control rodents and other pests. They enter the animal's body through multiple routes and

ultimately collect in the livestock products we consume -- milk, meat and eggs.

While the government may claim that rinderpest has been eradicated, new and emerging diseases continue to pose a major threat to the animal production programme. Emerging diseases like peste des petitis ruminants (PPR), blue tongue, sheep pox and goat pox, swine fever, contagious bovine pleuropneumonia, and New Castle disease (Ranikhet disease) cause substantial economic losses. Regarding diseases among small ruminants and backyard poultry, the loss is borne entirely by the owner. In most states, departments of animal husbandry and dairying are not well-equipped with infrastructure and technical manpower to carry out programmes on animal health.

The official argument is that declining budgetary allocations to animal husbandry and dairying -- Plan outlay has decreased over the past 10 Five-Year Plans from about 1.2% to 0.2% -- can be solved through privatisation. This is the position taken despite animal husbandry and dairying contributing over 5% of national GDP.

Change in livestock production systems

Farmers are being encouraged to shift from low-input systems to capital-intensive, high-input systems. Backyard poultry farmers are being encouraged to shift to commercial poultry farming or contract farming. Small ruminant holders are being encouraged to shift to dairy breeds. Most poor farmers cannot cope with these changes; they either do not shift or step out of livestock-rearing altogether. Efforts and policy directives have tried to upgrade local stock to 'high-producing' varieties or replace indigenous breeds altogether. This has had two effects. One, 'high-producing' breeds make greater demands on our resources, fodder, water, labour, capital, and healthcare. Poor families often find that between repaying loans, feeding and watering the animals, and increased healthcare, they are unable to make ends meet. The more marginalised among them soon end up selling the animals and losing their livestock assets. The second effect, which has far-reaching consequences, is the rapid disappearance of indigenous breeds and the associated genetic material. Should farmers wish to restock with indigenous breeds, quality animals will simply not be available.

There was a drastic decline of bullocks after the 1980s, with the share of farm animals as draught power declining from 71% in 1961 to less than 23% in 1991. The 59th round of the National Sample Survey Organisation (NSSO) reports that working cattle in rural areas declined by 25% between 1991-92 and 2002-03. There has been a corresponding shift in the composition of bovine populations from cattle to buffaloes. According to the 54th NSSO round, a mere 56% of households reported ownership of at least one livestock in 1998-99. Changes in livestock populations and composition

vary across different landholding categories, with the decline in livestock holding being sharpest among landless households.

The 59th round of the National Sample Survey reports of 2002-03 show that the average in-milk bovine stock owned per 100 rural landless households fell from 16 in 1971-72 to just 1 in 2002-03. During the same period there was an overall decrease in in-milk bovine stock per 100 rural households; it fell from 54 to 36. This decline was observed in all major Indian states. NSS reports 402 (48th round), and 493 (59th round) reveal that the average number of sheep and goat stock per 100 households has decreased amongst landless, marginal and small farmers over the past three decades. The average number has increased only in the large landholding category (over 10 hectares of land). Micro-level studies carried out in Gujarat, Andhra Pradesh and Orissa confirm the broad trends that obtain in the NSSO studies. The data indicates that it is becoming increasingly difficult for poor rural farmers to keep animals.

A false shift away from livestock

There is now a decline in livestock assets amongst poor, marginal and small farmers. While the livestock economy penetrates sections of rural society both vertically and laterally, and does so more equitably than landholdings, a matter of growing concern is that despite 70% of India's livestock being owned by landless, marginal and small farmers, recent studies across India indicate that over half of all these households are now 'non-livestock owners'. While the total population and density of livestock has increased over time, the number per rural household has dropped.

Indeed, the report of the working group on animal husbandry and dairying reaffirms this decline; it records that the employment rate in the livestock sector has gone down from 4.5% to 2.52%. The report treats this decline as an "inevitable shift" out of rural areas, agriculture and allied sectors and a move towards urban areas and the services sector. The reality is that the so-called shift has been forcibly imposed on peasant/farming communities as a result of neo-liberal economic reforms and policies brought in by the Indian government over the past two decades, encouraging and nurturing corporatisation of the agriculture and livestock sectors, and making it increasingly unviable for farmers to farm and rear livestock, resulting in the collapse of these rural livelihoods and the displacement of people from rural to urban areas. It is not, as is implied, some kind of "voluntary" decision; nor is there any "evolutionary" economic and market logic therein.

For several years now, farmer organisations, scientists and civil society groups have been questioning the validity of such development and growth models of food production and food security. These models, which are capital- and energy-intensive,

promote exotic hybrids and crossbreds, chemical fertilisers, pesticides and chemotherapy. They have driven farmers to despair and suicide. At the same time, experiences from different areas show that there are many alternatives to this global model of development, which posit the politics of food sovereignty: the right of people to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agricultural systems.

Rebuilding food sovereignty, coping with climate change

It is within this framework that organisations like Anthra have been working closely with farming and pastoralist communities. Anthra aims to transform the current situation with a view to addressing issues of food sovereignty and environmental justice and also the emerging challenges posed by climate change. We have worked with communities in efforts to revitalise and re-integrate livestock and agriculture. These include demonstrating concrete community strategies to conserve and rear local indigenous livestock and poultry breeds, enhancing fodder and water needs of livestock, promoting ethno-veterinary medicines, accessing preventive healthcare services from the government veterinary department, integrating livestock into ongoing ecological agriculture initiatives to improve energy efficiency (draught power), and recycling animal waste into the soil thereby returning valuable carbon to the soil and closing the carbon cycle. These experiences have formed the basis of ongoing learning as also for a proactive outreach programme to sensitise and empower communities that are involved in rebuilding autonomous food production systems. They also constitute the core of critical policy research campaigns to challenge policies that are detrimental to farming communities and offer concrete alternative strategies.

A major effort aims at enabling dialogue and conversations between farmers and scientists, and across disciplines, as many challenges lie at the interface of agriculture, forestry, commodities and trade, and health. Scientists within research institutions and animal husbandry departments have begun to unquestioningly accept certain paradigms and processes evolving in the research, development and extension fields as 'givens' --not to be questioned -- and end up conducting research within preset boundaries that have been drawn up by the State. For instance, the acceptance that there is no way forward but to privatise veterinary services due to lack of resources persuades scientists to carry out research within the framework of a privatised veterinary healthcare delivery system. Biotechnology as a quick-fix technology for all problems -- from increasing production yields, coping with climate change stresses, and disease resistance -- has begun to be accepted unquestioningly by the larger scientific community that thus abdicates its central role of critical enquiry.

In contrast, ecological agricultural practices prevent the build-up of animal waste,

thereby reducing the chances of greenhouse gas emissions entering the atmosphere. Returning valuable biomass to the soil ensures water retention, reducing the risks posed by sudden periods of drought. Encouraging local crop varieties which require less water reduces the need for expensive, energy-dependent irrigated systems. Local crops that also yield crop residue provide vital feed for livestock without the need to divert land from food to fodder. Encouraging local livestock breeds promotes draught animal power, thereby reducing our dependence on fossil fuels.

Managing manure is an important piece of the whole. Manure reduces demand for fossil fuel, which is the main raw material required to produce chemical fertilisers. Finally, strengthening local markets by connecting local farming communities to local consumers reduces transportation costs, thus the food market's carbon footprint. Bio-energy generated from animal waste not only provides domestic energy to rural households, it has other multiple benefits. Methane, which is 22 times more potent as a greenhouse gas than carbon dioxide, is efficiently transformed into useful domestic energy. This, in turn, implies that rural households make fewer demands on fossil fuel energy as their energy needs are taken care of at the local level. The slurry from biogas plants is recycled into local agriculture, thereby aiding both agriculture and reducing demand for chemical fertilisers.

While the food sovereignty paradigm is the only sustainable way ahead, it has to be matched by political interventions that will force the rich to reduce their consumption, thereby freeing up vital fossil fuel resources that can be redirected towards meeting the basic needs of the poor.

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