

Bovine Politics and Climate Justice

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Caught between deepening ecological, climate, and economic crises, marginal and small farmers in Telangana and Andhra Pradesh have been systematically pushed out of dairy and other livestock livelihoods. The growing political environment in India, openly supportive of cow-related hate crimes in the name of upholding anti-slaughter laws, is further destroying farmer livelihoods. Smallholder farmers are organising in creative ways, radically opposed to the dominant policy recommendation, in order to counter this situation and build climate and economic resilience that is socially just.

The two south Indian states of Andhra Pradesh and Telangana have laws that permit slaughter of all bovines, except the cow.¹ As a veterinarian who has spent most of her professional life working in these two states, I completely disagree with such an illogical slaughter ban on cows. The right of farmers to sell their cows and other ruminants for slaughter is a prerequisite for them to (i) sustain their livelihoods via replacements with younger stock, (ii) shape the cycle of ruminant production in holistic coexistence and harmony with the environment, contributing to climate resilience, and (iii) sustainably operationalise Article 48 of the Directive Principles of State Policy. “The State shall endeavour to organize agriculture and animal husbandry on modern and scientific lines and shall, in particular take steps for preserving and improving the breeds,” reads the policy, for which the centrality of slaughter has either been consciously ignored or perhaps not wholeheartedly comprehended. The constitutional debates on slaughter (Garg 2016) largely became a religious Hindu versus Muslim debate, rather than one grounded within cattle-based livelihoods and animal science. This focus would have drawn attention to the fundamental role of slaughter to balance domestic cattle populations and preserve the species. Erroneously, slaughter was implicated for driving down cattle populations and thus, Article 48 concludes with an inherent contradiction on how the preservation of stock would be achieved through “prohibiting the slaughter of cows and calves and other milch and draught cattle.” A predicament that continues to haunt us to date and manipulated to serve dreadful ends.

In a grim Indian reality where sustained cow-related hate-crimes against Muslims and Dalits² have been normalised and are provided political patronage (Saldanha 2017) under the narrative of the illegality of cow slaughter, I have chosen to keep anonymous the identity of farmers, villages, butchers, and cattle traders for whom slaughter is integral to their livelihoods. The farmers in the villages that form the basis of this paper are grateful for the presence of butchers purchasing non-productive bovines, including cows, and citizens consuming beef. The latter who, in fact, relish the meat of cattle, laughed at my question: “So do you eat buffalo meat?” All buffalo meat is exported they say; we only eat cattle meat, and buffalo meat is eaten in cities and goes to other countries.

In this paper, the political economy of cattle and buffalo rearing and the predicament of marginal and small farmers therein is explored through the lived reality of two villages. Our study of the first village seeks to interrogate the complex and layered forces shaping bovine, particularly cattle livelihoods of farmers trapped in agrarian crises. The study of the

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second village focuses on how farmers are organising to resolve a similar crisis.

Organising for Ecological and Economic Resilience

Between the late 1980s and early 1990s, small and marginal farmers, predominantly from backward castes, in Manchi Jeevitampally village in Andhra Pradesh, began to intensify their livestock and crop production practices in response to global and national economic policies: first, the green and white revolutions³ of the 1970s and 1980s, followed by the livestock⁴ and evergreen⁵ revolutions of post-liberalised India of the 1990s. The landscape changed from a typical agro-pastoral rain-fed dry land millet–pulse crop–livestock terrain, with its distinct Hallikar cattle and indigenous sheep and goat breeds, to intensively irrigated paddy fields via newly sunk bore wells, monocropped groundnut and tomatoes, and high-yielding exotic Holstein Friesian dairy cows stall-fed with green fodder and concentrate feeds. The crops began to be cultivated with excessive amounts of chemical fertilisers and pesticides. The mid-1990s situation of milk being sold via cooperative dairies and individual milk vendors soon gave way to a collapse of the once famous cooperative dairies in the region (Food Sovereignty Alliance 2017), and a mushrooming of private dairy processing companies (Landes et al 2017). The latter soon monopolised milk procurement and marketing, facilitated by India's liberalisation policies, which flagged dairying as one of the engines of growth (GoA 1999). It was argued that the small farmers would benefit from numerous private players in the dairy processing market (World Bank 1996; GoI 2002), which gradually turned out to be a myth. By 2012, small and marginal farmers of the village realised that it is the dairy processors (private and so-called cooperative) who controlled the markets for milk, leaving no room for the farmers to collectively decide or even negotiate the milk price.

From 2010 onwards, the farmers started becoming increasingly aware of the global and local forces responsible for their predicament largely through their engaged and continuous participation in movements organising for food sovereignty. Village activists involved in several conscientisation peer dialogues facilitated by the larger movement, took the lead in organising their communities. In 2012, the farmers decided to form a people's organisation, to collectively market their fresh milk to diverse local consumers (individuals, schools, tea shops, hotels, sweet shops, ice-cream parlours) located within a distance of 20 km. This was a strategy they learnt from small farmers in the global North, to challenge and bypass the centralised hegemony of private and cooperative dairy players. Despite reorganising their marketing to reduce the distance between themselves and consumers, the farmers' collectives were unable to completely buffer their livelihoods from the impacts of the global crash of skimmed milk powder (SMP) prices in 2015–16 (Ramdas 2015). This occurred when a key buyer switched from purchasing their milk, to buy cheaper SMP, abundantly available in the market, due to the SMP price slump.⁶ Many farmers in neighbouring villages poured their milk on the roads (FSA 2017) and finally sold their cows due to

unprofitable returns on their milk. The farmers' collectives of Manchi Jeevitampally were able to keep afloat, largely due to their decision to collectively market their produce to local consumers. They continued to price the milk procured from their members relatively higher than any other dairy processor in the market. Three years later, the global SMP price crash and its downstream effects continue (Das 2018), with the average dairy processor in the region paying farmers ₹21 per litre for cow's milk. A combination of de-acceleration of production, reaching out to local consumers, and placing limits on their production base has enabled the farmers' collective, with over 100 farmer-members from five surrounding villages, to continue to pay a higher price of ₹26 per litre to their members.

Strategies of Survival

Farmers in such a dire distress situation were grateful for the presence of local butchers who purchased cows for slaughter, through which farmers recover nearly one-third of their original investment.⁷ The price paid is linked to the animal's weight. It is usual practice for the farmers to sell non-productive and late (fifth/sixth) lactation cows, replacing their stock with younger cows to sustain their livelihood. In mid-2017, soon after the centre announced new rules⁸ banning the sales of cattle and buffaloes for slaughter in animal markets (coinciding with the holy month of Ramadan), violence broke out in nearby towns. Bands of *gaurakshaks* or cow vigilante groups suddenly surfaced, and threatened and beat up cattle traders and butchers in some instances. This had never occurred before. It was a difficult period for the farmers desperate to sell their unproductive and late-lactation cows. The butchers stopped visiting the villages and prices of non-productive animals plummeted from ₹15,000 to ₹2,000. Butchers felt it was too risky to transport the animals and farmers were scared to take their animals to the animal market. It took a couple of months for the situation to return to normalcy. Farmers believe that the sudden emergence of the *gaurakshaks* was directed at creating problems for the Muslim community, and making quick money from animals they confiscated, and ostensibly "returned" to farmers. According to the farmers' collective, these were not real farmers at all and it was just a ploy to sell the animals at a high price later on.⁹

During this seven-year period, farmer members of the collective began to realise the urgency of stepping off the "higher production" escalator and discussed the need to de-accelerate, de-intensify and revert to agroecological crop and livestock practices as a means to build ecological, climate and economic resilience. Their first decision was to go back down the genetic ladder and shift gradually to local Hallikar breeds. The Holstein Friesians were becoming far too input-heavy (in terms of capital, feed, fodder, water, labour, health-care) and with minimal resilience, totally incapable of withstanding the growing extreme climatic stresses.¹⁰ In short, due to the high risk in terms of climatic vulnerability and extreme price volatility of dairy markets. By 2018, many farmers had shifted from rearing pure Holstein Friesians to 50% crosses.

Marketing milk locally forged trust between farmers and consumers and reduced carbon miles. They continue to critically debate and have a dialogue on the need to limit the expansion of the number of dairy animals per household, as this would result in concentration of production to a few families. Instead, democratising production across several households of marginal farmers provides opportunities to supplement incomes and nutrition through dairying as one of the multiple production activities. Their final vision is to completely shift to the local Hallikar, moving away from rearing livestock as a “specialised” single commodity, to a diversified multifunctional livestock production system providing manure, milk, meat, transportation and energy. Their vision comprises re-diversifying agriculture to erstwhile resilient rain-fed cropping systems with a focus on cultivating food to feed themselves first and then sell surplus to local markets, and a change of animal-feeding regimes from intensive concentrate feeds to maximising the use of local fodder and crop residue.

Disappearing Livestock in Disappearing Small Farms

Badaligutta village in Telangana, with 800 acres of cultivable land, has 113 families, of which three are completely landless. Hundred marginal and small farming families, with an average holding of less than five acres, together own roughly 400 acres of the land and all of them are from backward castes, and Dalit and Muslim communities. The rest of the lands are mainly those irrigated by village tanks which are owned by the original feudal landlord family and nine dominant/upper-caste households. Several small and marginal farmers are tenant farmers, leasing in additional land from large landowners. Up to the early 1970s, nearly 200 acres of the current cultivable land was *gautan* (common) land, where village livestock were grazed, among other communal uses. Between 1970 and 1990, the government facilitated the distribution of these commons to landless farmers of the village, similar to other parts of Andhra Pradesh (Ramchandraiah and Venkateswarlu 2014). In contrast, the government put in minimum effort or political commitment to recover land from large landowners under the then Andhra Pradesh Land Reforms (Ceiling on Agricultural Holdings) Act, 1973. Tenant cultivation in the form of *batai* or sharecropping predominated until the 1990s. Similarly, many worked as labour or bonded labour, on the lands of the landowners and were paid in kind (grain). A large number of shepherds lived in the village, deriving their livelihood by penning their animals on the vast lands belonging to the large landowners and selling sheep. Over time, many shepherds sold their sheep and purchased land. The small farmers—whether on their own lands, or on leased lands—continued to cultivate the way they knew best: growing a variety of mixed millets, oilseeds, pulses and seasonal vegetables first for home consumption, and then for sale in local markets. Seeds were saved, exchanged and replanted. A critical feature of cultivation was collective and reciprocal labour-sharing amongst households to assist each other during various stages of the cultivation cycle, from land preparation to harvest. The unique combination of crops not only produced food for the

family, but also fodder for the animals to tide over the dry summer months. Surplus produce was sold in local markets.

Most families owned cattle, buffaloes, and some goats and hens. Farmers used the cattle in agriculture operations, transport, and to meet nutritional needs. Milk was sold locally in the village or to a milk vendor. Pastoralists of the region would visit the village each summer to graze their animals, in exchange for dung. Animals were sold either locally to another farmer in the village, in local markets, or to local butchers. Beef of cattle was bought from the local butchers.

The long-standing unaddressed structural inequity of land-ownership in the village was the fundamental factor that drove rapid conversion from food farming to commodity monocrops, such as cotton, paddy, and corn, beginning with the “reforms” in the early 1990s. As is well known, agriculture was one of the key sectors where India drastically reduced import duties on various commodities, withdrew government support, and facilitated private investment in both production and markets, amongst other things.¹¹

Capitalist farmers from the coastal regions of Andhra Pradesh came to the village, scouting for land to invest their capital and cultivate cotton. Naturally, they were directed to the large landowners, who offered to lease out their fallow lands in exchange for money. Soon, vast quantities of land were dotted with cotton. Erstwhile tenant farmers who till then had leased in land in exchange for grain, were now forced to cultivate a cash crop (cotton) to pay the lease. Small farmers were persuaded to cultivate cotton on their lands, witnessing the “progressive farmer” (read big landowners) apparently making good money. Another factor behind the rapid conversion to cotton and other monocropped cash crops was the breakdown of collective and reciprocal labour-sharing mechanisms that anchored food production. As more farmers began to cultivate cotton on their lands, food farmers found it impossible to leverage others to work on their lands under reciprocal labour terms. This was so because other farmers had shifted to a commodity crop and started hiring wage labour. Today, small and marginal farmers purchase nearly 90% of their daily-consumed food from local shops, including pulses, staple favourites like jowar and maize, vegetables, fruit, oil and, ironically, packaged milk. Save rice, red gram and vegetables in some households, hardly any food-crops are grown on their fields.

Loss of common grazing lands in Badaligutta between the 1970s and 1990s triggered the initial decline in livestock populations. The green revolution and mechanisation of agriculture, which was introduced in the village entirely through private investment (Srinivasalu 2015), further consolidated this decline. The rapid takeover of fields by cotton, corn, and paddy severely changed the draught requirements of livestock in agriculture operations, feed availability for animals, as also the relationship of farming families with their land, labour, livestock and environment. Fodder distress was a key reason for sale of large ruminants. This was hugely exacerbated by the loss of crop and, thus, crop-residue diversity as fodder, successive drought years, and labour scarcity, a pattern very typical of

villages in Telangana (Reddy 2013). This resulted in a steady exodus of all animals. From roughly 1,000 large ruminants and 1,500 small ruminants across 43 households in the 1970s, today the village has less than 50 large ruminants and 150 small ruminants across 17 households. With only 10 tractors in the village, today, almost all farmers plough their lands with tractors rented in from other farmers and bullocks for specific operations. In 2017, for the first time ever, many farmers sprayed their cotton fields with the weedicide glyphosate, after unwittingly purchasing illegally sold (herbicide-tolerant) cotton,¹² which completely destroyed diverse “weeds,” an important fodder.

Whilst farmers have always sold their old, non-producing, or unfit cattle and buffaloes for slaughter, the narrative of local butchers located 3 km from the village, corroborate the villages’ livestock tale. They have witnessed a steady increase in the number of farmers selling cows and bullocks for slaughter, which has accelerated over the past 10 years. The animals are slaughtered near beef shops and surrounding villagers purchase the beef which is sold on all days except Friday. According to a butcher, one–two animals are slaughtered every day. In fact, if there is one food item that is clearly a local food product—sourced locally and consumed—it is beef from cattle, as also mutton from sheep and goat. Thus far, these butchers have not been troubled by gaurakshaks, but a mere 20 km away, in smaller towns where the RSS has a strong presence, bands of vigilante groups regularly harass butchers and cattle transporters around the time of Eid.

Most farmers of the village, while valuing the role of animals in agriculture as draught animals, and as providers of manure, milk, meat and income, are reluctant to return to rearing bullocks or buffaloes for the following reasons: (i) there are no grazing lands, (ii) there are scarce fodder residues due to the changed cropping practice, (iii) there is a massive absence of home labour to graze animals, particularly where the elderly can no longer care for the animals, and where most of the youth are working in companies, an emerging pattern across Telangana (Avadhuta 2018), (iv) there is a reduced role for animals in the current monocropped industrial agriculture systems, (v) they have to contend and compete with cheaply priced Tetra Pak milk which has invaded farmers’ homes, and (vi) impatience or *wopa leka* to wait for time-taking returns from animals, compared to the quick cycles of monocrop cultivation. In this situation, local butchers foresee a gradual end to local cattle beef processing, unless farmers reverse their production and return to rearing cattle. This could be possible only if farmers change their cropping patterns and production goals.

Challenges before Small Milk Producers

Small and marginal farmers in neighbouring villages located nearer to roads that connect them to urban centres, such as Hyderabad, rear local buffalo breeds. They sell their milk through a collective of small milk vendors to sweet shops and yoghurt and *khoya* makers in small towns and in the outskirts of Hyderabad city. Vendors are concerned about fluctuating

milk prices caused by various large dairy processing companies dumping cheap milk into the cities and rural areas (Ramdas 2015). It is a constant struggle, but they survive because of a historical relationship between the consumers, vendors, and farmers, ensuring the continuing presence of small producers in dairying. A new threat is the combined paddy harvester, which substantially reduces the length of harvested paddy straw, leaving nearly half of its stalk on the ground.¹³ Animals do not graze on this taller standing crop residue remaining on the land, as they would on hand-harvested short paddy stubble, and farmers end up burning these standing stalks in preparation for the next season. Acute summer fodder shortage is exacerbated when farmers burn the crop residues of paddy, which also contributes to air pollution (Jitendra et al 2017). All non-productive buffaloes are sold in local animal markets, for slaughter.

The situation in Badaligutta is not an exception, but increasingly the norm. Government records (NSSO 2014) as well as several independent studies (Kishore et al 2016) indicate a massive pan-India decline in bullock ownership amongst small and marginal farmers, which is largely a result of mechanisation, disappearing grazing lands, and changed cropping patterns.

These challenges and the gradual exit of small and marginal dairy farmers from their livelihood cannot be cross-validated using the most recent NSSO reports on livestock and landownership (NSSO 2014), which intriguingly has no data on the category “in-milk bovine ownership across households,” precluding any decadal analysis. NSSO data between 1961 and 2002–03 shows an increased percent share of marginal holdings in total for in-milk bovines from 20%–52%. At the same time, between 1991 and 2002–03, a slight increase in in-milk bovine ownership across landholdings was also reported (Kishore et al 2016). A gradual structural shift in milk production from small and marginal farmers to medium and large farmers has been reported by the United States Department of Agriculture (Landes et al 2017), Yes Bank (Hemme et al 2015), and Rabobank (Rabobank 2016). Estimates by Yes Bank suggest that, out of 76 million farms involved in milk production in India, nearly 40% of total milk production occurs from medium (10–50 animals on a farm) and large farms (1,000 animals upwards), and only 60% of production continues to be contributed from small and marginal farmers owning one to two animals. It points to a scaling up of herd size and specialisation in farming as the way forward. Rabobank, a major financier of dairy businesses in India, has projected farmer-owned dairy farms with 50–300 animals as becoming key to milk supply in the coming years, with a decline in share of milk procured from small and marginal farmers. Dairy processors are projected to invest in and directly source raw milk from these farms (Rabobank 2016). Even in the case of cooperative dairies like Amul, 5%–10% of farmer members are commercial large-scale dairy farmers, with projections of many more heading that way (Das 2015).

The above trend from small to big is a well-established global outcome of policies that promote intensification and corporatisation of animal production, along with factors analysed earlier. There is sufficient global evidence of “intensification and

specialisation” triggering the exit and exodus of millions of smallholders from rearing livestock. The dairy, meat, and poultry industrialising development trajectory of the global North is characterised by a massive decline in small family farms, with the majority of milk being supplied by a handful of large farms and markets monopolised by even fewer large processing companies (Mcbride and Macdonald 2018). A report by the Food and Agriculture Organization (FAO) on Asian livestock (Ahuja 2013) succinctly illustrates how smallholders from China, Thailand, Malaysia, and Indonesia, who began to “specialise, enlarge their herd sizes, and take up new technologies, and vertically integrate themselves into supply chains,” got trapped in complex and chronic debt cycles, and were forced to leave production altogether, with a handful of survivors. This happened with pig rearers in China and poultry rearers in Thailand. The same process is now unfolding in India in the context of dairy animals. This consolidation and monopolisation down the value chain from farm to plate, has been accompanied by relentless cycles of booms and busts; each “bust” triggers an exodus of small farmers, and further expansion and consolidation of the large farmers (Food Sovereignty Alliance 2017).

Intensification: The Magic Wand?

A vast number of policymakers and intergovernmental institutions, such as the FAO (Gerber et al 2013), support the intensification (or further industrialisation) of milk and meat production systems as a win-win mechanism to address seemingly irresolvable and opposing present-day demands: mitigating and minimising the environmental impacts of animal protein, within a supposed “inevitable” rise in demand for animal protein globally, particularly in the global South. They argue that as emission intensities per unit of meat/milk produced are supposedly lowest from intensive, grain-fed industrialised “landless livestock production systems,”¹⁴ and highest in extensive “livestock grazing systems,” where ruminants predominantly feed on grass (Garnett et al 2017), consumers should be encouraged to consume meat produced from such intensive industrialised production systems. In fact, the advice is to shift to monogastric products, as these animals are said to emit much less methane and use far less land per unit of livestock product over their production cycles as compared to ruminants. FAO’s recommendations on climate mitigation are technologies to intensify production practices such as shifting to high-yielding breeds, enhancing concentrate feeds, and using artificial insemination with sexed semen to reduce non-productive animals (Gerber et al 2013). These are presented as a “win-win” situation for smallholders to respond to climate change, and to benefit from the growth opportunities of increasing demand.

The radical strategies to build climate, ecological, and livelihood resilience adopted by the farmers’ collective in Manchi Jeevitampally to de-intensify and revert to agro-ecological livestock rearing practices, from a production situation where they were following every intensification strategy in the book, completely challenge these global climate mitigation proposals for intensification. Furthermore, people’s strategic response

fosters climate justice, as it blocks monopolisation and concentration of resources and the means of production in the hands of a powerful few. Local cattle breeds, whilst producing far less milk than a Holstein Friesian, are highly climate resilient, requiring much lower quantities of water, fodder, private land, care, and labour, and contribute in multiple ways to a farmer’s livelihood, including milk production. They are successfully reared on public grazing lands.

Impacts of the Structural Shift

What have been the impacts of this structural shift in ownership of dairy animals, producing 165.4 million tonnes of milk (49%–52% from buffaloes, 44%–47% from cows and the balance from small ruminants), and 3.4 million tonnes of meat (48% from buffaloes, 42% from small ruminants and 10% from cattle) annually (GoI 2012)?

It has clearly not negatively affected the total quantities of milk, beef or leather produced or marketed. The carabeef and associated leather markets boomed, up to the point when Hindu Brahminical forces in political power brought in all manners of restrictions¹⁵ targeting beef and cattle slaughter (Ramdas 2017a, b). It has severely compromised and jeopardised the rights of citizens to a desired source of protein, namely, beef. It has also resulted in a disruption of the leather industry and three million associated livelihoods (Gupta 2017), where the decline in domestic availability of skins and hides due to crackdowns on slaughter have had to be compensated through an increased unnecessary expenditure on imports of hides and skins.¹⁶

This structural shift has also negatively affected small and marginal farmers who are gradually being excluded from access to the means of production, as also in turn compromising their access to animal protein in the form of milk, where it is culturally appropriate.¹⁷

The expansion and intensification of dairy production, processing and marketing, resulting in this structural shift in production ownership, should have (by the arguments set out by global and national policymakers) addressed protein nutritional requirements of the poor in India. The reality is different: while the per capita milk availability of 355 grams per day in 2016–17 far exceeds the recommendations of 285 g per day (Islam et al 2016), the figures hide the reality of skewed consumption of milk and milk products. According to NSSO data, milk consumption amongst India’s rich and middle classes is nearly 6.8 times higher than that of the very poor and 3.3 times higher than the poor (Kumar and Parappurathu 2014). Industrialising and privatising production through economies of scale has simply failed to address questions of equity.¹⁸

Government policies on the other hand, to subsidise the cheapest source of meat today, namely, industrial poultry, as well as intensively reared dairy production, are driving a transformation in cropping patterns, from food to animal feed like corn, as we saw in the case of Badaligutta.

While there are several calculations of carbon emission per unit of milk from Indian cows and buffaloes, and mutton from

small ruminants (Vetter et al 2017), there are no estimates for Indian beef. With Indian beef being a by-product of dairy, it could well be the least environmentally damaging, with the lowest emission intensities per unit of animal protein (milk and beef) as compared to either intensive industrial or grass-fed beef,¹⁹ the critical challenge being that of a rapidly industrialising production system and the growing disconnect between crops and animals.

The State and the People

The state shows scant interest in engaging with the crises being faced by small farmers, beginning with the inequities of landownership down to its policies of subsidising and facilitating the capture of production and markets by big farmers and corporations, a core reason for the exodus of small farmers from production. Accompanying this decimation is the Brahminical Hindu cultural moorings of the state that inform its irrational decisions on slaughter, and its bigoted view of beef and its consumers. Instead of wasting precious

citizens' taxes on programmes for abandoned cows and overcrowded *gaushalas*, a fallout of the bans on slaughter and interstate cattle transportation, the state needs to take responsibility for enabling small farmers to take back control over production and local markets.

The small and marginal farmers of Manchi Jeevitampally and Badaligutta are engaged today in serious dialogue on strategies to build their collective power to organise for change and for liberation from this highly vulnerable system of commodity production. These include: organising for genuine land reforms; placing food for home consumption as central to cultivation; using the power of agroecology as countervailing knowledge to emancipate from being trapped by agribusiness corporations; returning animals to their multifunctional roles within food farming; re-diversifying production and organising into non-centralised and localised markets which link local producers and consumers; and resisting the Brahminisation of their societies. The farmers are committing to these strategies moving forward.

NOTES

- 1 The Telangana Prohibition of Cow Slaughter and Animal Preservation Act, 1977 (as adapted by the Telangana Adaptation of Laws Order, 2016) and the Andhra Pradesh Prohibition of Cow Slaughter and Animal Preservation Act, 1977.
- 2 A recent incident happened in June 2018 in Hapur, Uttar Pradesh (*Firstpost* 2018).
- 3 The white revolution, also known as Operation Flood, was a 26-year programme implemented by the National Dairy Development Board and financed by the World Bank to operationalise the growth of dairy cooperatives. It dominated dairy development through the 1970s, 1980s and up to the mid-1990s.
- 4 The International Food and Policy Research Institute (IFPRI) scripted the Livestock Revolution narrative in the early 2000s (Delgado et al 1999), projecting a massive growth in demand for animal protein (milk and meat) globally, predominantly from low-income and emerging economies (such as India and China). This demand could only be met through economies of scale, and smallholders integrating into this.
- 5 A term coined by M S Swaminathan to refer to increased productivity via ecology and technology, which has been criticised by several others for being internally contradictory with one another.
- 6 The global slump in SMP prices triggered a massive build-up of domestic SMP stocks held by dairy processors in India, which was hitherto exported. The "solution" was offloading their cheap SMP stocks within the country, resulting in disastrous downstream impacts on dairy farmers. See FSA (2017) for a detailed analysis and discussion.
- 7 According to the National Dairy Development Board, the economic value of an animal in its seventh lactation is a mere 30% of its value in its first lactation. Calculations for sustainable dairying projects how the youngest animals produced in the herd replace the oldest animal, and animals other than in their first, second or third lactations are sold to maintain constant herd size. Forty percent of a dairy farm's income is derived from the sale of unproductive cows (<http://www.dairyknowledge.in/content/10-crossbred-cow-farm>).
- 8 Prevention of Cruelty to Animals (Regulation of Livestock Markets) Rules, 2017, G S R 494 (E), 23 May, Ministry of Environment, Forest and Climate Change Notification.
- 9 Similar reports have been well documented from other parts of India. See *NDTV* (2016).
- 10 This felt experience of farmers has also been discussed and analysed by scientist. See Chauhan and Ghosh (2014).
- 11 For a comprehensive discussion on 25 years of liberalisation in the agriculture sector, see Ghosh (2016).
- 12 According to several media reports, 2017 saw widespread cultivation of unapproved herbicide-tolerant cotton across Telangana, which spurred the use of the weedicide/herbicide glyphosate (Prasad 2017).
- 13 This is similar to what is happening across the country. See Jitendra et al (2017).
- 14 Far from being "landless systems" of protein production, these systems derive their feed inputs from colonising vast acres of farm lands across the globe with animal feed crops such as corn and soya, which are then transported across huge distances to feed animals in another part of the world.
- 15 India's export of leather and leather products for the financial year 2015–16 recorded a negative growth of 9.86%, touching \$5.85 billion as against \$6.49 billion in the previous year (*Business Standard* 2017). Similarly India's carabeef exports declined by 18% between from 15.03 lakh tonnes in 2014–15 to 13.3 lakh tonnes in 2016–17 (Dhara 2017) and remained pretty much the same in 2017–18 (*Business Today* 2018).
- 16 India's import of raw hides/skins and leather increased from \$472.60 million in 2010–11 to \$609.59 million in 2016–17, growing at a CAGR of 4.33% in the last seven years (see CLE 2018). Raw hide imports attract a zero tariff in India while wet blues have a tariff of 14.7%. See Export.gov (2017).
- 17 Milk is increasingly being pushed and projected as the only source of protein, even in geographic regions and amongst communities where it is culturally and agroecologically inappropriate (Srikrupa et al 2016).
- 18 According to the report by Landes et al (2017), the share of expenditure on milk and milk products is directly proportionate to the income class, with highest expenditure being in the highest income classes of households.
- 19 FAO reports on climate change have flagged how beef produced by dairy cattle has generally

lower emission intensity than beef produced by specialised beef cattle. This is explained by the fact that emissions from reproductive animals are allocated to milk and meat in the case of the dairy herd, and to meat only in the case of the beef herd.

REFERENCES

- Ahuja, Vinod (2013): "Asian Livestock: Challenges, Opportunities and the Response," Proceedings of an International Policy Forum held in Bangkok, Thailand, 16–17 August 2012, Animal Production and Health Commission for Asia and the Pacific, International Livestock Research Institute and Food and Agriculture Organization of the United Nations.
- Avadhuta, Mahesh (2018): "Telangana, Andhra Pradesh Youth Say No to Farming," *Deccan Chronicle*, 3 February, <https://www.deccan-chronicle.com/nation/current-affairs/030218/telangana-andhra-pradesh-youths-say-no-to-farming.html>, accessed on 7 August 2018.
- Business Standard* (2017): "Slaughterhouse Ban to Hit Leather Goods Industry, Impact Make in India," 1 April, https://www.business-standard.com/article/current-affairs/slaughterhouse-ban-to-hit-leather-goods-industry-impact-make-in-india-117040100264_1.html.
- Business Today* (2018): "India Exported 13-lakh Tonne Buffalo Meat in 2017–18; Vietnam, Malaysia, Egypt Top Spots," April, <https://www.business-today.in/current/economy-politics/buffalo-meat-exports-up-2percent-at-1.35-mn-ton-in-fy18/story/275774.html>.
- Chauhan, D S and Nilotpal Ghosh (2014): "Impact of Climate Change on Livestock Production: A Review," *Journal of Animal Research*, Vol 4, No 2, pp223–39, doi: 10.5958/2277-940X.2014.00009.6.
- CLE (2018): "Raw Material Sourcing Meet of Council for Leather Exports," Council for Leather Exports, India, <http://leatherindia.org/wp-content/uploads/2017/11/One-day-meet-advt-fin-A.pdf>.
- Das, Sohini (2015): "Amul's Not So Marginal Farmers," *Business Standard*, 23 October, https://www.business-standard.com/article/companies/amul-s-not-so-marginal-farmers-1151023_00023_1.html, accessed on 4 August 2018.
- (2018): "Problem of Plenty: Milk Procurement Hit, Prices to Dairy Farmers Drop 20%," *Business Standard*, <https://www.business-standard.com/>

- article/markets/milk-procurement-hit-prices-to-farmers-drop-20-sector-asks-for-govt-help-11801090059_1.html, accessed on 7 August 2018.
- Delgado, C, M Rosengrant, H Steinfeld, S Ehui and C Courbois (1999): "Livestock to 2020: The Next Food Revolution," International Food and Policy Research Institute, Washington, DC, www.fao.org/ag/againfo/resources/documents/lvst2020/20201.pdf.
- Dhara, Tushar (2017): "Buffalo Meat Exports from India Declined 18% in Two Years: Govt," *News18*, 9 August, <https://www.news18.com/news/business/buffalo-meat-exports-from-india-declined-18-in-two-years-govt-1487187.html>.
- Down To Earth* (2017): "Fields on Fire: Crop Intensification Is the Culprit," <https://www.downtoearth.org.in/coverage/river-of-fire-57924>.
- Export.gov (2017): "India-Agricultural Commodities," India Country Commercial Guide, Export.gov, International Trade Administration, Department of Commerce, United States of America, 1 August, <https://www.export.gov/article?id=India-Agricultural-Commodities>.
- Firstpost* (2018): "Hapur Lynching: New Video Shows Mob Forced Man to Confess to Cow Slaughter," 23 June, <https://www.firstpost.com/india/hapur-lynching-new-video-shows-mob-forced-man-to-confess-to-cow-slaughter-4578701.html>.
- FSA (2017): "The Milk Crises in India: The Story behind the Numbers," The Dairy Working Group of the Food Sovereignty Alliance, India Reclaiming Diversity and Citizenship, <https://foodsovereigntyalliance.files.wordpress.com/2017/10/the-milk-crisis-in-india.pdf>.
- Garg, Lovish (2016): "Examining the Constituent Assembly Debates on Cow Protection," *Wire*, 15 October, <https://thewire.in/law/unveiling-indias-long-history-of-hypocrisy-on-cow-slaughter-laws>, accessed on 7 August 2018.
- Garnett, T, C Godde, A Muller, E Rööös, P Smith, I J M de Boer, E zu Ermgassen, M Herrero, C van Middelaar, C Schader and H van Zanten (2017): *Grazed and Confused? Ruminating on Cattle, Grazing Systems, Methane, Nitrous Oxide, the Soil Carbon Sequestration Question—and What It All Means for Greenhouse Gas Emissions*, FCRN, University of Oxford.
- Gerber, P J, H Steinfeld, B Henderson, A Mottet, C Opio, J Dijkman, A Falucci and G Tempio (2013): "Tackling Climate Change through Livestock: A Global Assessment of Emissions and Mitigation Opportunities," Food and Agriculture Organization of the United Nations (FAO), Rome, <http://www.fao.org/3/a-i3437e.pdf>.
- Ghosh, Jayati (2016): "25 Years of Economic Reforms: Agriculture," *Frontline*, August.
- GoA (1999): "Andhra Pradesh Vision 2020," Government of Andhra Pradesh, Hyderabad.
- GoI (2002): "Report of the Working Group on Animal Husbandry and Dairying for the 10th Five Year Plan (2002–2007)," Planning Commission, Government of India, New Delhi, http://planningcommission.nic.in/aboutus/committee/wrkgrp/wg_anhbndry.pdf.
- (2012): "Report of the XII Plan Working Group on Natural Resource Management and Rainfed Farming," Planning Commission, Government of India, New Delhi, http://planningcommission.nic.in/aboutus/committee/wrkgrp12/agri/wg_NRM_Farming.pdf.
- Gupta, Ayushi (2017): "Clampdown on Cattle Slaughter: A Threat to the Indian Leather Industry?" *QRIS*, 4 June, <https://qris.com/clampdown-on-cattle-slaughter-a-threat-to-the-indian-leather-industry/>.
- Hemme, Torsten, Amit Saha and Prashant Tripathi (2015): "Dairy Farming in India: A Global Comparison," IFCN Dairy Research Network, Germany Food and Agribusiness Strategic Advisory and Research Group (FASAR), YES BANK.
- Islam, M M, Shabana Anjum, R J Modi and K N Wadhvani (2016): "Scenario of Livestock and Poultry in India and Their Contribution to National Economy," *International Journal of Science, Environment and Technology*, Vol 5, No 3, pp 956–65.
- Jitendra, Shreeshan Venkatesh, Ishan Kukreti, Kundan Pandey, Deepanwita Gita Niyogi and Polish Mukerjee (2017): "India's Burning Issue of Crop Burning Takes a New Turn," *Down To Earth*, 2 June, <https://www.downtoearth.org.in/coverage/river-of-fire-57924>.
- Kishore, Avinash, Pratap S Bithal, P K Joshi, Tushaar Shah and Abhishek Saini (2016): "Patterns and Drivers of Dairy Development in India: Insights from Analysis of Household and District-level Data," *Agricultural Economics Research Review*, Vol 29, No 1, pp 1–14.
- Kumar, Anjani and Shinof Parappurathu (2014): "Economics of Dairy Farming and Marketing: Micro-level Perspectives from Three Major Milk Producing States of India," *Indian Journal of Animal Sciences*, Vol 84, No 2, pp 204–09.
- Landes, Maurice, Jerry Cessna, Lindsay Kuberka and Keithly Jones (2017): "India's Dairy Sector: Structure, Performance, and Prospects," USDA, March.
- Mcbride, William D and James Macdonald (2018): "Low Costs Drive Production to Large Dairy Farms," Researchgate, https://www.researchgate.net/publication/228818141_Low_costs_drive_production_to_large_dairy_farms.
- NDTV* (2016): "How a Cattle Shelter Profits from Gau-Rakshak Violence," 1 August, <https://www.ndtv.com/video/news/news/how-a-cattle-shelter-profits-from-gau-rakshak-violence-425762>, August 2016.
- National Sample Survey Office (2003): "National Sample Survey (59th Round Report No 493) Livestock Ownership Across Operational Land Holding Classes in India 2002–03," <http://mail.mospi.gov.in/index.php/catalog/136>.
- (2014): "National Sample Survey (70th Round KI (70/18.1) Key Indicators of Land and Livestock Holding in India," http://mospi.nic.in/sites/default/files/publication_reports/KI_70_18.1_19dec14.pdf.
- Prasad, B Krishna (2017): "Telangana to Curb Sale and Supply of Herbicide-tolerant BG-II," *Times of India*, 5 December, <https://timesofindia.indiatimes.com/city/hyderabad/telangana-to-curb-sale-and-supply-of-herbicide-tolerant-bg-iii-cotton/articleshow/61926699.cms>.
- Rabobank (2016): "The Prospects for Medium-scale Dairy Farming in India," April, <https://research.rabobank.com/far/en/sectors/dairy/india-medium-scale-dairy-farming.html>.
- Ramchandraiah, C and A Venkateswarlu (2014): "Land Laws, Administration and Forced Displacement in Andhra Pradesh, India," CESS Monograph No 35, Centre for Economic and Social Studies, Begumpet, Hyderabad.
- Ramdas, Sagari R (2015): "Death of Small-farmer Dairies amidst India's Dairy Boom," *Economic & Political Weekly*, Vol 1, No 19, <https://www.epw.in/journal/2015/19/commentary/death-small-farmer-dairies-amidst-indias-dairy-boom.html>.
- (2017a): "The Beef Ban Effect: Stray Cattle, Broken Markets and Boom Time for Buffaloes," *Wire*, 6 April, <https://thewire.in/politics/beef-ban-cattle-market>.
- (2017b): "The Sordid Truth about the BJP's Drive against Meat in UP," *Wire*, 8 April, <https://thewire.in/politics/up-illegal-meat-bjp>.
- Reddy, Amarendra A (2013): "Rural Transformation since 1970s in Dokur Village of Andhra Pradesh, India," MPRA Paper No 51836, 2 December, ICRISAT, <http://mpr.ub.uni-muenchen.de/51836/>.
- Saldanha, Alison (2017): "Deadliest Year for Cow-related Hate Crime since 2010, 86% of Those Killed Muslim," *Indiaspend*, 8 December, <http://www.indiaspend.com/cover-story/2017-deadliest-year-for-cow-related-hate-crime-since-2010-86-of-those-killed-muslim-12662>.
- Srikrupa R, Sagari R Ramdas and Radha Gopalan (2016): "Small Dairy Farmers Across India Are Struggling for Their Livelihoods," *Wire*, 4 June, <https://thewire.in/labour/small-dairy-farmers-across-india-are-struggling-for-their-livelihoods>.
- Srinivasalu, K (2015): "Agrarian Crisis and Farmers' Suicides: Reflecting on the Green Revolution Model," CMDR Monograph Series No 75, Centre for Multi Disciplinary Development Research.
- Vetter, Sylvia H, Tek B Sapkota, Jon Hillier, Clare M Stirling, Jennie I Macdiarmid, Lukasz Aleksandrowicz, Rosemary Green, Edward J M Joy, Alan D Dangour and Pete Smith (2017): "Greenhouse Gas Emissions from Agricultural Food Production to Supply Indian Diets: Implications for Climate Change Mitigation," *Agriculture Ecosystem Environment*, 16 January, Vol 237, pp 234–41, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5268357/>.
- World Bank (1996): "India Livestock Sector Review: Enhancing Growth and Development," Agriculture and Water Operations Division, Country Department II, South Asia Region, World Bank, Washington, DC, <http://documents.worldbank.org/curated/en/827361468771312573/pdf/multi-page.pdf>.

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