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A cog in the capitalist wheel: co-opting agroecology in South India

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ABSTRACT



The Andhra Pradesh Zero Budget Natural Farming project was implemented by India's State of Andhra Pradesh in 2016 and renamed AP Community Managed Natural Farming (APCNF) in 2020. APCNF is recognised as a successful example of peasant-led agroecology by social movements, multilateral UN bodies, governments, and researchers. We offer more critical perspectives here, and argue that this agroecology model deepens inequality and dispossession. Despite claims to the contrary, APCNF is locked in an unchanged productivist paradigm controlled by capital in collaboration with the state. By co-opting agroecology, APCNF closes down options for a just transformation of the dominant agri-food regime.

KEYWORDS

ZBNF; agroecology; cooption; inequality; APCNF; greenwashing

Introduction

The Andhra Pradesh Zero Budget Natural Farming project (APZBNF) was first implemented by India's State of Andhra Pradesh (AP) in 2016. It was renamed Andhra Pradesh Community Managed Natural Farming (APCNF¹) in 2020. It is also described as Andhra Pradesh Climate Resilient Community Managed Natural Farming (APCNF 2022). APCNF is a state-promoted agroecology model aiming to transition six million farmers and eight million hectares of land to entirely chemical-free farming. The basis for India's Natural Farming/Organic Farming programme (Natural Farming Niti Aayog n.d.; Niti Aayog n.d.), it has acquired huge international traction (see Box 1) as a mechanism to fast-track the UN's Sustainable Development Goals. It is seen as the solution to the agrarian and food problems of the Global South, the magic bullet to adapt to the world's climate crisis, and the means to liberate farmers from indebtedness (Khadse and Rosset 2019; AFSA 2022; Patel et al. 2022).

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¹In this paper referred to as APCNF/APZBNF.

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Box 1. The APCNF agroecology model.

APCNF is anchored by Rythu Sadhikara Samastha (RySS), a government-owned private limited company conceptualised by the Andhra Pradesh government and the World Bank (2014). It has successfully packaged itself globally as a ‘farmers empowerment organisation’ governed by farmers and excelling in farmer-farmer extension and innovation. Every year APCNF has attracted a growing number of partners and collaborators, enabling groups historically antagonistic to one another – such as the International Peasant Movement *Via Campesina* (strongly opposed to capitalism) and the World Economic Forum (a bedrock of global capitalism, at which APZBNF was reportedly launched) – to converge on a common platform to champion the APCNF Agroecology Model.

Based on the principles of Zero Budget Natural Farming (ZBNF) promoted by Subash Palekar, APCNF describes itself as a farming practice that builds on the principles of agroecology. APCNF involves the natural growth of crops without synthetic fertilisers and pesticides as well as minimal consumption of ground water. The net cost of production of the main crops is reduced by growing intercrops, border crops, multicrops. Locally available cow dung, cow urine, handfuls of soil, jaggery, pulses flour, and botanicals for bio-pesticides are used as inputs for seed treatments and soil inoculations (APCNF 2023a; GIST Impact Report 2023).

APCNF has been internationally championed as a positive example of scaling up peasant-led agroecology by social movements, agri-business, multilateral UN bodies, global financial and philanthropic institutions, research institutions, and academia alike. The APCNF has been feted by the World Economic Forum (WEF 2016), the UN General Assembly (UNEP 2018), the Food and Agriculture Organisation (FAO, 2019), the World Future Council (WFC 2018), and the Paris Peace Forum (2019), and showcased by Biovision and the Global Alliance for the Future of Food (BFED and GAFF 2019) as a Beacon of Hope project, as India’s flagship project in the UN Food Systems Summit (UNFSS 2021), and as a UNFSS Champion (Vijay Kumar 2021a). In January 2023, it was presented at the Oxford Real Farming Conference, co-organised by key progressive international peasant movements for food sovereignty (ORFC 2023).

The overwhelming majority of APCNF’s farmers are Dalit², OBC³ and Adivasi⁴. It is in their name, and for their intended benefit, that this state-led programme is being implemented and APCNF is widely celebrated for working for the landless, small and marginal farmer (Dharmendar 2019). In this paper, we review the empirical evidence to analyse and test its many claims, offering more critical perspectives on the practice of APCNF in the south Indian State of Andhra Pradesh (AP).

Methods and analytical framework

This research draws on:

- i A year long desk-study of APZBNF/APCNF in 2021–22, a collaborative project between the Food Sovereignty Alliance, India and the Centre for Agroecology, Water and Resilience at Coventry University, UK.
- ii Knowledge derived from both authors’ lived experience of organising with local communities for food sovereignty during the preceding 30 pre-APCNF years in the erstwhile unified state of Andhra Pradesh and subsequently in the now two distinct states of AP and Telangana.

We analyse APCNF against the framework of agroecology defined by social movements. We also use the frame of sustainability transitions and agroecological

²The Caste System: one of the oldest systems of domination and exclusion, it ranks people at birth into a hierarchy based on alleged purity and pollution (Soundararajan 2022, 217). It institutionalised the caste-oppressed as ‘untouchables’, whose self-assertion as Dalits, in the words of the scholar-activist Suraj Yengde (Yengde 2019), is ‘an emancipatory category not confined to individual pasts, but unites people who are oppressed under the casteist regimes.’

³OBC-Other Backward Classes, a category notified by Government of India for non-Dalit socially and educationally disadvantaged caste-oppressed communities.

⁴India’s Indigenous Peoples.

transformation that focuses analysis on changes in six interrelated domains: access to natural ecosystems, including land, water, and seeds; systems of economic exchange and markets; knowledge and culture; social networks and local organisations; discourses; and equity, gender, and diversity (Anderson et al. 2021).

We view agroecology as an alternative paradigm for agriculture and food systems that is simultaneously: (a) the application of ecological principles to food and farming systems that emerge from specific socioecological and cultural contexts in place-based territories; and (b) a social and political process that centres the knowledge and agency of Indigenous peoples and peasants in determining agri-food system policy and practice (Pimbert et al. 2021).

We also acknowledge that for people's movements, agroecology aims to build countervailing power to advance food sovereignty and challenge the global capitalist corporate agribusiness food and farming regime. Agroecology has been described as a framework for political action, subjectivities, representations and practices as alternatives to the hegemonic model of agribusiness and the project of capital (Val et al. 2019). It is a political project, and a primary pathway for the socially and environmentally sustainable transformation of agri-food systems by reorganising the relationship between human beings and nature outside of the frameworks of hegemonic modernity and capitalist logic (Val et al. 2019). Intrinsic to agroecology is the contestation of entrenched power structures.

The co-option of agroecology: the case of Andhra Pradesh

The historical context

APCNF was founded by the state (AP and the Government of India) and multilateral institutions such as the World Bank. These are the same set of actors whose structural adjustment and macro-economic capitalist reforms of the early 1990s were pivotal in creating the agricultural and food crises in AP and India. Multisectoral World Bank loans negotiated directly with the State of AP fast-tracked reforms and financed the withdrawal of the welfare state, the entry of the 'Facilitative State' and corporate capture. This enabled the inflow of large private capital to deliver monetised market services. Thus began the privatisation of agriculture, power, drinking water, irrigation, food and nutrition, health-care, education and housing in AP, with cost-recovery and user-fee strategies. Parallel and integral to the strategy to advance capitalism, World Bank loans were offered in the name of 'poverty alleviation' (The World Bank 2014). These facilitated the linking up of banks and financial services with the meagre savings of millions of Dalit-Bahujan⁵ and Adivasi women self-help groups (SHG) organised into state-level federations (The World Bank 2015a). The AP state stood as guarantor and pro-actively enabled these tie ups. The World Bank invested in testing 'prototype capitalist market models' to replace public services, with willing reformers like the erstwhile Chief Minister of AP (The World Bank 2010). These models once certified 'successful' by the same players who created them, were then upscaled as National Programmes (The World Bank 2014) (see Box 2).

⁵Bahujan meaning the vast majority, comprising the oppressed caste-classes.

The reforms were only partially revealed to the wider public as a development vision branded 'Vision 2020' (GoAP 1999; 2020).

Box 2. Self-Help Groups (SHG) for economic growth.

The SHG as an aggregator was deployed within service delivery and commodity supply chains. SHGs enabled the selling of health insurance financial services (Shukla et al. 2011), vertical integration with private and cooperative agribusiness dairy processors (Rao et al. 2007), decentralised commodity procurement bypassing regulated agriculture markets (Rao et al. 2007), market-based food-security mechanisms which undermined India's commitments to a public distribution system (Mohan et al. 2007), securing land for women collectives via 'market-assisted' land reforms that have been critiqued globally for failing to support redistributive land reform (Borras 2003; Rani 2013). Under the aegis of the Employment Generation & Marketing Mission (Shenoy, Lakhey, and Shah 2010) SHGs have also facilitated processes through which impoverished youth with minimal literacy skills from extremely oppressed and marginalised adivasi and Dalit communities have been placed at the exploitative mercy of national and multinational retail chains.

The state of AP was bifurcated into the states of AP and Telangana in 2014, with neither States radically altering their capitalist macro-economic policies. Within months of new state formation, the World Bank's compliant leader in AP, Mr Chandra Babu Naidu, regurgitated an identical sequence of actions to those he had implemented 20 years earlier. In August 2014 (Kasturi 2014), a Vision 2029 titled Sunrise Andhra Pradesh (GoAP, 2017a) was announced. It aimed to transform the state into 'a globally competitive and innovative driven society, through structural transformation to achieve the status of a developed state by 2029, and a leading global investment destination by 2050' (GoAP 2016). In neighbouring Telangana, the government in power of the new State announced an Industrial policy of 'Minimum inspection and Maximum facilitation' to attract national and international investment (Government of Telangana 2014). Both States clearly demonstrated their desire to fast-track capitalist economic transformation, so much so that by 2016, a mere 18 months later, the World Bank ranked both AP and Telangana 1st in the country for 'ease of doing business' (Gol 2016; The World Bank, 2016). This was made possible by aggressive pro-capital, land, labour, tax, power, infrastructure, water and environment reforms (Moneycontrol News 2018; Reddy 2018; The Economic Times 2014), all of which severely undermined workers rights (CFA 2018; CFA 2019; John 2022; Newslick 2018), landrights (Rajeev 2023; Sonal 2018), and fast-tracked environmental destruction (Kukreti 2017).

Agriculture reforms scripted the agrarian crises in AP

Coming specifically to agriculture, the reforms implemented in Andhra Pradesh pre-bifurcation aimed to reduce agriculture's share of employment – from 70 per cent in 1999 to 40 per cent by 2020 (GoAP 1999). Agriculture was to be morphed from a paradigm of food for domestic needs (contributing 35% of the States GSDP) to an export commodity-driven, technology-intensive, productive and efficient corporate infrastructure, and investment-driven agriculture model controlled by corporations from farm to plate (contributing 12% of GSDP). The vision argued that in the interest of the state's food security,⁶ the then existing seed system – in which 80% of seeds grown were saved by farmers from the previous harvest – should be replaced by seeds sold by corporations (GoAP 1999).

⁶Vision 2020.

Communities thrown out of agriculture and losing their livelihoods were assured of being absorbed in other sectors, and would exercise their 'right' to essential services under the aegis of the market (GoAP 1999). The agriculture strategy enabled private capital finance to spread green revolution technology into AP's rainfed areas (60% of the state's total gross cropped area) where it was particularly ill-suited given its requirement for irrigated land. Despite widespread critique and rejection of Vision 2020s plans for agriculture by citizens and inclusive deliberative processes (Kuruganti, Pimbert, and Wakeford 2008; Pimbert and Wakeford 2002), it was aggressively operationalised by the state. Vision 2020 reforms dispossessed millions of farmers and created deep agrarian crises, the most extreme manifestations of which were farmer suicides. This was unambiguously concluded by the Commission on Farmers Welfare, appointed by the then Andhra Pradesh government to investigate the huge impacts of the agrarian crises (GoAP 2004).

On the other hand, the post-bifurcated Andhra Pradesh State (GoAP 2014), the World Bank, and ICRISAT⁷ (GoAP-ICRISAT 2014), amongst others, blamed with complete impunity farmers and their 'illiteracy' for the farm crises. Their solution was to continue to reduce the employment share of agriculture from 55% in 2014–15 to 40% by 2029 (which they had hoped to reach by 2020), and transform 'excess' agriculture labour force into productive and low-skilled manufacturing labour force (GoAP 2017a). The complete integration of agriculture and food into capitalist markets and global agribusiness value chains was to happen via precision farming, post-harvest supply chain and logistics infrastructure, commodity branding with world leading companies, and the supply chain integration of MSMEs⁸ and Farmer Producer Organisations (FPO). Women's SHG groups were central to this next phase of reforms, amplifying their debt and loan servicing functions to grow finance capital (GoAP 2017b). Capitalist market expedient national policy decisions such as the policy on Doubling Farmers Income by 2022 (Gol 2018a) complemented the policies of Andhra Pradesh. Once again, empire needed 'willing collaborators' to agree to being the laboratory of next stage reform experiments. Shortly thereafter fresh World Bank loans were signed (World Bank 2015b, 2018) to fast-track the next phase of reforms in Andhra Pradesh.

It is within this state-facilitated capitalist agriculture paradigm – backed by the World Bank – that the APZBNF agroecology programme was launched in 2016, and continues to operate as APCNF (APCNF 2018). New political leadership in the state in 2019 only repackaged and renamed the existing agriculture policies and strategies. The APCNF agroecology model is located within the paradigm of corporate controlled agribusiness and global value chains. It also nestles comfortably within entrenched, hidden but pervasive, structures of dispossession and exploitation.

Agroecology within a frame of extreme land inequality

The APCNF agroecology programme rests on a superstructure of extreme inequality in land ownership (Rawal and Bansal 2021) and expanding landlessness amongst India's most marginalised and discriminated-against citizens: Dalits, Adivasis, and Muslims. Landlessness in Andhra Pradesh, according to various government data sources, ranges anywhere from

⁷The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is one of 14 international research centres constituting the CGIAR – the Consultative Group for International Agricultural Research (<https://www.cgiar.org>).

⁸Micro, small and medium enterprises (MSMEs).

54.4% (Rawal and Bansal 2021) to nearly 74% (Rawal and Bansal 2021). Dalit landlessness in Andhra Pradesh stands at 60% (Gol 2019), amongst the highest in the country. Land distribution amongst the other landowning families is also extremely skewed, in terms of gender, class and community category. Rawal (2008) points to Andhra Pradesh as having the highest inequality in landholdings nationally, with the top 5% households owning 30% of total land and the bottom 50% owning 0.24%. Complete absence of political will by the state to execute land distribution as part of genuine land reforms maintains the situation. Capitalist paths of agriculture transformation, including liberalised land tenancy laws, have enabled land concentration in the hands of the elite and privileged caste-class-gender block, and enhanced inequalities (Rawal and Bansal 2021). Accompanying the high-levels of unequal land distribution are the growing numbers of tenant farmers in AP. With 34.8% of the total operated area and 39.5% of total operational households under tenancy arrangements, Andhra Pradesh had the highest levels of agriculture tenancy in India. This is nearly three times higher than the all-India average and continues to increase (Rao 2023). Simultaneously, between 2002 and 2012 tenancy showed a huge shift from shared tenancy to fixed rent tenancy in cash (29.9% to 55.6%), again significantly higher than all-India averages. This trend shifts the entire risk burden onto tenants and increases their vulnerability. Tenancy is also extremely high amongst socially marginalised communities. For example, the share of leased land amongst Dalits is 56.5%, which reveals the double burden on already exploited communities. The state amended its land-tenancy laws in 2019. However instead of serving the interests of the tenant, these new laws have been severely critiqued for favouring and protecting the interests of the landowner. They facilitate sub-leasing by intermediaries and lease-ins of large areas of agriculture land by big corporates. Moreover, the amended land-tenancy laws have absolutely no checks on rents – this is left to market forces where tenant and landowner are treated as equals (Rao 2023, 7). Recently, the GoAP amended a land law (GoAP 2023) to allow marginalised landowners in possession of government assigned lands for more than 20 years to have the right to alienate their land (Apparasau 2023). Whilst on face value this appears to benefit people, the government simultaneously detailed how these legal amendments could be used to improve ease of land procurement by investors/industry (Bhavani 2023). Simultaneously, the government of Andhra Pradesh enacted a new land law named The Land Titling Act 2023 (LTA) (Act 27 of 2023). The LTA has been rigorously critiqued and called out for helping to promote land markets and enable business that benefits the wealthy, whilst facilitating land alienation of Adivasi peoples in particular (Rao 2023).

A recent APCNF study reports that 66% of APCNF farmers belong to historically privileged dominant castes termed Other Castes (OC) and OBC communities (Reddy 2022), with the remaining being Dalit (13%) and Adivasi (21%). Overall, there is very poor presence of women farmers in APCNF – a mere 5.9% of total APCNF farmers surveyed (IDSAP 2022). APCNF studies also flag poor adoption of APCNF by tenant farmers, as the APCNF hinders their ability to pay land rents in the short term, even if there are financial gains in the long term (Gupta, Tripathi and Dholakia 2020). This reluctance of tenant farmers to adopt CNF continues to date (IDSAP 2022). These findings are indicative of how critical it is for the state to execute redistributive land reforms to correct the massive inequality in land ownership. Equitable land reform is a pre-requisite for any kind of agroecological benefits accruing to the landless.

What is the impact on the target communities?

Dalit and Adivasi women's labour subsidises commodity farming

APCNF functions within pre-existing unequal and exploitative caste-patriarchal land-labour production relations and power structures. No amount of farm mechanisation can replace the physical work involved in moving the original 'core' 4 wheels⁹ of ZBNF (Vijay Kumar 2019) and related agroecological practices. APCNF studies (Galab et al. 2019; Gupta, Tripathi, and Dholakia 2020; Khurana and Kumar 2020; Praxis 2019; Reddy, Reddy, and Reddy 2019) highlight the increased time and labour costs involved in ZBNF transition of farms from chemical to non-chemical, which over time is reported to reduce as soils regain health (Ranjit et al. 2020). The recent Gist Impact Report (2023) finds a 21% increased labour requirement on APCNF farms as compared to Non-APCNF farms. So who provides the labour? This same study confirms an extremely patriarchal and gendered division of work where it is women household members – and not men – who do the increased labour-consuming tasks of preparing and applying organic inputs that commonly include cow dung, cow urine, neem powder and compost. In contrast, when these households were 'chemical' it was the men who performed the less labour demanding tasks of preparing and using the agro-chemicals (Gist Impact Report 2023). APCNF farmers report a doubling of income because they use family labour (Narain 2023). However, this masks the reality of highly unequal workloads between genders. In effect, the term 'family labour' is used as a euphemism to hide the increase in unpaid women's labour and the higher workload of women household members.

A major gap in research is the complete absence of analysis on the implications of APCNF for agricultural workers. There is also no detailed research on the gendered effects of APCNF on women's labour through the lens of caste. However, based on a perusal of government data on agriculture workers (Gol 2011), the analysis on landlessness, studies on women's workforce participation (Chakravarty 2020), and APCNF reports (Vijay Kumar 2020), we can conclude that landless Dalit and Adivasi women agricultural workers form the backbone of the hired labour working on lands they mostly do not own. Scarcity of hired labour and family labour are a constraint reported by APCNF farmers, and have increased from 35% and 24% of farmers reporting the problem in 2018–19 to 60% and 52% in 2021–22 (Reddy 2022). This shortage of labour is experienced by a greater proportion of APCNF farmers today, despite expectations of the Gist Report 2023, which described how higher labour needs would automatically translate into increased employment in rural areas. This disconnect clearly demonstrates that something deeper is unfolding, and that this needs to be scrutinised and unpacked.

Whilst their labour subsidises commodity farming – be it chemical and in all likelihood agro-ecological – the Women's SHG Federation was envisioned (Vijay Kumar et al. 2009) to expand its role as a financial intermediary to (i) perform a linking role to institutions of global finance capital and agri-food supply chains, (ii) offer monetised paid-for services to its members, to transform from chemical to agroecological, and (iii) be an aggregator of 'agroecological goods' which are supplied to agribusiness via tie-ups (see Box 3). These

⁹Subhash Palekar (2005) coined the term ZBNF with 4 core practices: (i) Achaadana: mulching the ground with crops residue/crops, enhancing decomposition and humus formation; (ii) Jeevamrutam: multiplying soil microbiomes with an inoculum of fermented cow dung, urine; (iii) Beejamrutam: microbial treatment of seeds pre-sowing with cow urine and dung formulations; and (iv) Waaphasa where ZBNF practices build soil humus, soil moisture, soil structure.

activities are already underway, with farmers purchasing ZBNF biopesticides/inputs and hiring machinery via shops set up by individuals who borrowed from the SHGs (Palit et al. 2019). In 2020 (Express News Service 2020) and 2021 (Express News Service 2021), the state facilitated tie ups between women and corporate agribusiness entities, with the state standing as guarantor for the investor.

Box 3. Self-Help Groups (SHGs) and finance.

The architecture of the women's SHGs as end-to-end service providers of 'a complete package of options' to farmers to transform from chemical to non-chemical farming was conceptualised and framed by the precursor to APZBNF/APCNF: the Community Managed Sustainable Agriculture (CMSA) programme, which was another component of the World Bank loan for poverty alleviation. The SHG aggregator role was to facilitate access to services including credit, insurance, inputs, procurement, value addition and marketing of produce. SHGs also enabled branding and certification of CMSA produce as well as agreements with large organisations for bulk purchases of produce in domestic markets, urban retail spaces, and tie-ups for export of fair-trade and organic products (Vijay Kumar et al. 2009).

Today, 123,122 SHGs and their 4740 federations continue to provide financial and capital services, production inputs and market linkages for APCNF (Vijay Kumar 2021a, 2021b). They are unequivocally a cog in the value chain of a state-facilitated capitalised market-driven project of agroecological transformation. The SHGs in APCNF are a conduit for credit (APCNF 2023b; NABARD 2023) facilitating the flow of finance capital from public and private banks, and now a site to pilot-test blended finance investments into APCNF via a GEF project (GEF 2021). A key partner of this latter project is BNP Paribas, the French Bank called out globally for its dirty financing of massive fossil fuel extraction (Limb 2023). In this model of agroecological transformation, a farmer is expected to self-finance their transition with finance capital borrowed from the women's SHGs (Rose, Halstead, and Griffin 2021), purchase inputs 'from ZBNF input shops established via credit borrowed from SHGs' (Rose et al. 2021; Tripathi, Nagbhusan, and Shahidi 2018), and sell their ZBNF branded produce via agribusiness controlled markets. The project asserts with misplaced pride how there is no direct support or subsidy to farmers, and that the expenditure of Rs 15000 per farmer over a period of eight years to fully transform their farming, derived from loans and grants, is utilised for capacity building (76%), PGS certification and monitoring (12%), community fund to the SHG groups (10%) and programme management (2%).

Hard business and the growth needs of capital – rather than altruism or a concern for the earth – drive these financing decisions. The Andhra Pradesh SHG federation stands first in the country in terms of cumulative SHG savings (Rs 18,606 crores). Eighty-nine percent of SHG groups have outstanding loan repayments to banks, and boast of the highest average loan disbursement to SHGs at Rs 7.64 lakhs. Commercial banks are heavily invested in SHGs, holding 58% of all SHG saving accounts (NABARD 2023, 23) with micro-credit / microfinance accounting for a quarter of a bank's loan portfolio (NABARD 2023, 55). Banks view SHGs as dependable and 'cost-effective' creditors that use internal societal pressure on their members for timely loan repayment. This acts as a collateral, with the bank saving on the 'high transactional cost of rural small borrowers' (NABARD 2023). In short, the bank derives benefits by extracting the free labour of women to police one another to repay without fail. Today financial institutions are deeply concerned about microfinance having reached saturation in the southern Indian states, including Andhra Pradesh (NABARD 2023). They are desperate to deepen credit lines to SHGs so as to sustain their (the banks') own growth. The new credit support avenues envisioned for SHGs include financing their role as aggregator platforms to facilitate economies of scale, extend value chains, partner with sector players in e-commerce and digital markets, and engage in climate finance. APCNF ticks all these boxes.

A testing ground for big tech agribusiness

The state supports APCNF as a space for big tech/big data controlled capitalist market experimentation and corporate agribusiness tie-ups. Since its inception in 2016, the programme has primarily been financed by the government of India (Niti Aayog, n.d.; Gol 2018b) and the state government via its collaborations with multilateral finance institutions (The World Bank, International Fund for Agriculture Development) (Dharmendar 2019) as well as international development cooperation institutions (Japan International Cooperation Agency) and international banks (KfW from Germany) (Somasekar 2020). The spread of APCNF within Andhra Pradesh is aided by philanthropic organizations like the Azim Premji Foundation (Vijay Kumar 2021b) and to other countries by Co-impact (Express News Service 2022) with a grant of USD 15 million to the Rythu Sadhikara Samstha. Except for grant support from the Azim Premji Foundation, all other finance sources are credit agreements which either directly support APCNF (KfW 2022), or

provide indirect support via state-level credit agreements that earmark funds for APZBNF/APCNF as part of activities that complement one another and further each others objectives (GoAP 2016; 2018a; 2018b; 2019a; 2019b).

Institutions and projects which partially or wholly finance APCNF prioritise five areas:

- i aggregating small producers into Farmer Producer Organisations (FPOs) to perform a range of business services (see Box 4). The FPOs help to integrate these business functions with agribusiness investors, financial institutions, and agribusiness value-chains to link them to local, national and international-export markets. Integration in global markets is the means to increase farm income.
- ii leveraging private investments by placing public goods (e.g. irrigation services, pond rehabilitation, and the development of common assets for primary storage, logistics, processing, etc.) at the service of private actors in order to incentivize their investments in high-value agriculture (World Bank 2018).
- iii enhancing market efficiency by supporting market information systems that meet the specific needs of private actors, especially producers, traders, and exporters.
- iv addressing gender concerns by promoting women's inclusion as members and decision makers in this larger structure, and foregrounding the central role of women's SHGs.
- v focus on Climate Smart/Climate Resilient Agriculture. Climate Smart Agriculture (CSA) is the justification used to finance and expand the area under farm mechanisation (IFAD 2017; World Bank 2018, 47) and promote the use of drones for precision farming (APIATP 2018). In turn, climate smart APCNF (Rosenstock et al. 2024) is increasingly sold as a Nature-based Solution (NbS) for mitigation and adaptation to climate change. As such, APCNF is now well placed to attract substantial amounts of global finance earmarked for carbon offset schemes and carbon markets for NbS (Carney 2021; Wynberg et al. 2023).

Box 4. Farmer Producer Organisations (FPOs) create business opportunities.

The FPO undertake the following:

- Input services: seeds, fertilisers (including production and sale of organic farming inputs), pesticides, livestock feed, veterinary services for animal rearing, The Resource Organisation (RO) will facilitate getting necessary licenses from the Agriculture Department to stock and sell inputs.
- Productivity enhancement services: adoption of practices for improving productivity, water conservation measures, hiring of machinery.
- Marketing of produce in local, regional and export markets. FPOs forge market linkages with private sector companies, local mandis and large traders. Contract farming will be undertaken. There could be particular opportunities in the production and sale of organic crops. FPOs can also procure various commodities under the Minimum Support Price programme of the Government.
- For marketing of sheep and goats, FPO marketing committees aim to link producers with large terminal markets in Chennai, Hyderabad and Bangalore. They manage a supply chain to provide a constant supply of high quality, healthy sheep and goats of the age and size required by the buyer.
- Value addition, especially primary processing of grading, packaging and processing in commodities.
- Act as business correspondent of banks for lending to tenant farmers.
- Financial services where absolutely needed for crops, livestock purchase, including facilitation for godown/warehouse receipt financing where this is feasible. For fruit trees this could include loans to producers to enable them to avoid making sales in advance of harvest – as has been done for mango producers in Tamil Nadu by the IFAD supported PTSLP.
- Information sharing on crop insurance and livestock insurance, facilitation for insurance for non-loanee farmers, facilitation for grievance redressal.
- Information sharing on prices of commodities, good practices in storage and warehousing.

Source: Andhra Pradesh Drought Mitigation Project (IFAD 2017, 50).

A state-financed agroecology programme thus promotes itself as a space for public-private multi-stakeholder financial collaborations and private investments from capital markets. Most notably, APCNF serves to pilot-test green growth and sustainability market models, with agroecological production in AP as a cog in the corporate controlled supply chains of global food (Sourceup *n.d.*). Of deep concern is how the state uses its power to normalise and endorse deeply exploitative and false market-based capitalist solutions to sustainability, placing its most vulnerable citizens at the centre of these experiments.

In 2018, the Sustainable India Finance Facility, a partnership between the UN Environment Programme (UNEP), the World Agroforestry Centre (ICRAF), and the bank BNP Paribas, signed an agreement with GoAP to facilitate a USD 2.3 billion investment to scale up ZBNF (BNP Paribas 2018; UNEP 2018). Sustainability Partnerships have also been signed with IDH, which is a consortium of top Global Corporate food and agriculture agribusiness players, digital data corporations, the World Bank, and researchers of market-based solutions to climate change, biodiversity and sustainable production. This corporate partnership aims to experiment with sustainable landscape sourcing (IDH 2018; 2021). Moreover, ZBNF/APCNF produce is being marketed via Producers Market (Producers Markets *n.d.*) which is a project of the Producers Trust, of which RySS is a Trade Collaborator (Producers Trust *n.d.*). This is a blockchain agri-tech start-up which has joined hands with IBM Food Trust to experiment with food traceability, and a technology-driven marketplace that links producers and consumers via big data technologies such as distributed ledger technologies, smart contracts, and cryptocurrency in the global multitrillion-dollar agriculture value chain (Security Token Market 2019).

Privatising knowledge and inputs

Another recent public-private investment is via a Global Environment Facility (GEF) loan for ZBNF, with a contribution of USD 44 million private blended finance from the Bank BNP Paribas in the form of guarantees and equity funds (GEF 2021). This project aims to demonstrate how, 'The avoided subsidies for synthetic fertilizers, could potentially free-up resources that can then be redirected to servicing loans from impact investors' (GEF 2021). Assessments show that ZBNF agroecology reduces the use of chemical fertiliser, water and electricity. This translates into savings in fertiliser subsidy equivalent to USD 295 million/ Rs 2100 Crores¹⁰ per year (Vijay Kumar 2022; Gupta, Tripathi, and Dholakia 2020). Similarly, the savings in annual electricity subsidy amounts to Rs 3000 Crores (Vijay Kumar 2021a) and savings of 50% to 60% are estimated for water (CSTEP 2020). These valuations are used to argue for the removal of agricultural subsidies, and as a means to service loans from impact investors. A similar argument is used to justify the withdrawal of state investments in agriculture extension services. It is argued that the latter can be delivered by privately financed or volunteer ZBNF peer-to-peer farmer learning and farmers acting as resource persons or models. None of the studies, including the recent Gist Impact Report 2023, propose to reallocate these savings as direct subsidy-support to each farmer – to assist them to transform their farming from petrochemical to diverse regenerative agroecologies. Instead, they champion market mechanisms to

¹⁰1 crore equals 10 million.

power agroecological transitions that fit and conform with the dominant capitalist agri-food regime.

All of these studies identify the middleman as the key exploitative actor. They therefore propose to use data and technology such as blockchains and AI in supply chain management to bypass existing regulated markets to connect producers with consumers. Ironically, this is to be done via global agribusiness corporations, which are the most exploitative actors in the food and farming business. The Verified Sourcing Area Compact (VSA), as reported earlier by Ramdas (2022), is one such blockchain technology model. This innovation is now being tested in collaboration with RySS to source APCNF produce at a landscape level by SourceUp. The Steering Committee and partners of SourceUp include some of the largest global agribusiness corporations in the food supply chain. SourceUP promotes collaborative efforts known as a 'Compact', which is 'a multi-stakeholder coalition consisting of local government, local civil society organizations, producer groups/cooperatives, and traders' who work together for sustainability. According to the platform promoters, a Compact has the power to transform agricultural production systems far beyond what each of its individual stakeholders can do alone. The platform of SourceUP links agri-commodity companies with these multi-stakeholder initiatives. Corporate agri-commodity buyers meet their sustainability goals by sourcing commodities using sustainability indicators pre-determined by Sourceup. Most notably, these indicators are verified at a landscape level and not at the farm level.

Furthermore, as critically analysed by Ramdas (2022), these shockingly exploitative models are being tested on indigenous territories without the free and prior informed consent of indigenous communities. This clearly undermines national and international laws that protect Adivasi territories.

APCNF: where Brahminic¹¹ episteme allies with capitalism

APCNF and ZBNF share a Brahminic episteme. In this natural farming agroecological episteme, 'crops' – not human beings and their relationship with the means of production and with one-another – are placed at the centre of the discourse. APCNF/ZBNF has thus failed to structurally and systemically alter the Brahminic caste-land-labour-gender-capital production relations that are the foundation of inequality, discrimination, exploitation and oppression in agrarian AP.

A recent editorial by one of India's eminent environmentalists describes her profound admiration and excitement on witnessing APCNF at work at scale:

Field after field, we see a combination of trees and food crops. I can see arecanut, moringa tree (drumstick) and papaya on the farm boundaries and vegetables like beetroot, spinach and beans, all growing with millets, corn and even lentils. Everything is growing in profusion ... But they spend next to nothing on seeds, pesticides or fertilisers. Their water expenses are low. They use family labour, and in this way they earn double or more of what others do. They are also able to mitigate risk with multiple crops. (Narain 2023)

This comment emphasises once again how nature can heal and rebuild itself with natural farming practices that enrich the soil and diversify the landscape. APCNF is thus seen to

¹¹Brahminism: the ideology that produces, reproduces and keeps the Caste System and its hegemonic privileging of dominant Castes and dehumanization of the caste-oppressed intact.

benefit the landowner – whether he is a 30-acre-owning dominant caste large farmer or a ½-an-acre near landless Dalit woman marginal farmer. This visual spectrum coupled with data that masks the caste-class-gender relations of production obfuscates the deeper structural questions of ownership and power: whose land?, whose labour?, whose capital?, whose knowledge counts?

The narratives of farmer indebtedness stemming from chemical farming practices and the ‘chemical-addicted mindsets of ignorant farmers’ (Vijay Kumar 2022) are archtypically Brahminical and arrogant hypocritical accusations. They fail to call out the role of global capital and imperialism in having shaped an unjust food and farming regime. Food and agriculture policies, trade, and intellectual property rights (IPRs) forced the shift to labour displacing petrochemical agriculture, land consolidation, and more rural poverty¹² in the first place. Global capital now seeks to reap new profits from these sites of destruction by reframing agroecological solutions as the new markets for capital investment. It is these unequal relations of production which shape dispossession, discrimination, poverty and injustice. These realities are facilitating the disturbing meta-structure of big tech/big data and the corporate capture of agroecology to serve the interests of Capital.

The privileging of the indigenous or ‘desi’ cow as the source of urine and manure features in all APCNF publications and studies (Gist Impact Report 2023; IDSAP 2021; Kumar et al. 2020; Praxis 2019; Reddy 2022). This reality contradicts claims on the APCNF website of respecting farmers’ choice of farmyard manure from buffaloes (APCNF n.d.). In a recent paper, Reddy (2022) analyses data from the annual social-economic impact studies commissioned by APCNF and reveals how the ‘scarcity of desi cows’ (a constraint faced by APCNF farmers) has nearly doubled in four years: 37% of farmers flagged this as a constraint in 2018–19 compared with 66% of farmers in 2020–2021 and 2021–22 (Institute for Development Studies Andhra Pradesh 2022). The high cost of cows is cited as a deterrent to adoption (Bhattacharya 2017; Galab et al. 2019; Praxis 2019a; Khurana and Kumar 2020), and is forcing poorer farmers to purchase raw materials from *gaushalas*,¹³ neighbouring farmers (Kumar et al. 2020), or from input shops (Rose, Halstead, and Griffin 2021). Unfortunately, none of the studies reveal the caste-base of livestock ownership, nor the ownership of cow-based biopesticide enterprises. Lack of access to land coupled with embedded discrimination and exclusionary practices (Sarkar 2020) are core reasons for the minimal cattle livestock ownership amongst Dalit households. It can therefore be reasonably presumed that it is the dominant caste of land-owning farmers who are able to invest in desi cows, and start up APCNF biopesticide enterprises. This would result in further accumulation of wealth and assets in the hands of the haves.

The centrality of the cow in APCNF is symbolic of Brahminism, and continues as a core component of the nationally upscaled missions, policies and programmes of Natural Farming (National Mission on Natural Farming Management and Knowledge Portal, n.d.; Niti Aayog n.d.; Nity Aayog 2023). These new developments are strongly influenced

¹²Increasing landlessness is a key feature of the agriculture-dependent livelihoods of Dalits and Adivasis. 96.3 percent of Dalits and 63 percent of Adivasis in AP are agricultural workers deriving their income from irregular, mostly seasonal, low wage work, with a minority being cultivators (Gol 2011). This is a core reason why every second Adivasi, every third Dalit and Muslim and every 4th person from the OBC community is classified as multidimensionally poor (UNDP and OPHDI 2021). Dalit and Adivasi children and women have significantly higher levels of anemia (IIPS and ICF 2021) than other community categories. Amongst southern Indian states, AP reports the highest anemia levels in women (ibid).

¹³Cow-shelters for stray cows.

by Subhash Palekars ZBNF, now rechristened SPNF (n.d.), and the Andhra Pradesh APCNF model (National Mission on Natural Farming Management and Knowledge Portal, n.d.). Despite huge internal contradictions (Ramdas 2023), foregrounding the cow in Indian agriculture meshes well with the political and cultural rewiring underway in India. Decolonisation is equated with Hindu cultural assertion for the creation of a powerful Hindu state.

As a final point, APCNF is based on a heavily funded top-down, one-way pedagogy of knowledge creation and transmission by 'experts' – moulded on the brahminical construct of 'Guru-Shishya Parampara', or the guru-teacher (be it Subash Palekar or in the case of APCNF community resource persons called champion farmers and master trainers) (APCNF 2022a; Gist Impact Report 2023; Rose, Halstead, and Griffin 2021). The Guru master trainers instruct farmers about the 4 wheels and other agroecological practices. Self-described as a knowledge intensive programme, 77% of the APCNF funds to transform a farmer are utilised for capacity building (APCNF 2022). Yet 'Knowledge Gap' as a constraint identified by farmers has increased from 24% in 2018–19, to 63% of surveyed APCNF farmers in 2020–21 (IDSAP 2022, 143; Reddy 2022). The reasons for this are unclear. However, the pedagogical practice of APCNF is certainly not about facilitating safe spaces for collective learning through horizontal dialogue and sharing community knowledge(s), or co-producing knowledges (Wakeford et al. 2016) and expressing these through actions/experimentation, as has been the praxis of Adivasi (Food Sovereignty Alliance 2017) and Dalit food sovereignty networks (Community Media Trust, P.V. Satheesh and M.P. Pimbert 2008).

Brahminism, the original colonial force in India, is being posited as the alternate to 'modernity', western cultures, and the hegemony of multinational corporations. In reality however, the APCNF is an emblematic illustration of Brahminism in comfortable alignment with global capital.

APCNF: food security not food sovereignty

APCNF is a far cry from agroecology as countervailing power by the most oppressed and dispossessed to advance food sovereignty, with popular agrarian reform and agroecology as a means of production for a more autonomous way of life. The pre-requisite of genuine land reforms is non-existent in the APCNF paradigm. The oppressed and dispossessed, whose labour anchors this project, are not the core decision makers on how and for whom food is produced, distributed, and consumed. Reciprocity, complementarity, sharing and collectivising labour, seeds, livestock breeds, knowledge, land, food – all core food sovereignty governance principles – are absent in the APCNF agro-ecology project. APCNF is built on the capitalisation of the food and farming system. Food security is the goal and the focus is on cultivating a 'primary commodity crop' – be it cashew, coffee, millets, pulses, banana or mango – sold in exchange for money. Primary crops are pre-designated under 'one district-one crop' clusters for ease of exports (MOFPI n.d.). Even millets, pulses and dryland rice, which should be cultivated to feed oneself and local communities, are produced and certified to meet standards set by a larger global corporate cohort and will inevitably be sold, rather than be consumed at home (APCNF 2023c). The commodity crops in question are pre-decided and cultivated largely in response to the demand-side supply chain, increasingly controlled by

agribusiness. APCNF farmers thus produce for the market and are cogs in distant supply chains. The inequality of the system excludes the caste-oppressed agricultural workers from purchasing and consuming the higher priced ZBNF food that was produced by their alienated labour. The income they earn from this agroecological project will go to purchasing the cheapest 'chemical food' in the market. This raises fundamental questions about the APCNF agroecology project and the many studies which claim that APCNF increases 'well being', access to safe food, and wealth for farmers. In reality, APCNF is accumulating these benefits for the historically privileged landowning castes, whilst sustaining the larger meta-frame of inequality and discrimination.

APCNF markets are embedded within a vast systemic landscape that is redesigning governance strategies with global greenwashing capital at the centre. Proximate drivers of change include sustainable landscape management and sourcing (SourceUp n.d; GEF 2021), soil carbon sequestration initiatives to sell carbon credits (IDSAP 2022), gaining leverage in emerging carbon markets (Kaur 2023), and joining multi-stakeholder platforms and networks populated with agro-chemical corporations like Bayer, Croplife, and the International Fertilizer Association (Coalition of Action 4 Soil Health n.d.), which continue to run an aggressive chemical warfare against the environment. Loans from primarily private investors will have to be serviced by individual farmers and the state, following a design that is pre-decided by state and capital. Parts of this new global governance structure are digitally and remotely controlled, complete with central surveillance and end-to-end food traceability.

Conclusion

Analysed against the six domains of transformation for taking agroecology to scale (Anderson et al. 2021), our evidence suggests that the APCNF model is severely constrained by (i) the huge inequality of land and resource ownership, (ii) non-inclusive and hierarchical epistemes of knowledge and resource production and reproduction, (iii) agroecological production linked to export via agribusiness-controlled value chains and global greenwash capital, (iv) monetised systems of exchange, (v) practices of agroecology governed by institutions that work to defend the interests of capital and not labour, the latter being predominantly Dalit and Adivasi women, and (vi) public sector financing which facilitates and acts as guarantor for exploitative models of private accumulation.

The APCNF agroecology model is built on an entrenched superstructure of inequality, exploitation, and dispossession. In the case of India, these entrenched power structures are capitalism, caste and its underlying ideology Brahminism, and Brahminical patriarchy (Ramdas 2021). Despite its claims to the contrary, APCNF operates within an unchanged productivist paradigm controlled by capital in collaboration with the state. Powerful promoters of APCNF seek to 'lock in' agroecology into transition pathways that are designed to sustain capitalism, colonialism, and patriarchy (Pimbert 2022).

By conforming with 'business as usual', APCNF effectively closes down options for agroecological pathways aimed at radically transforming the dominant agri-food regime. The APCNF-ZBNF success story on scaling up agroecology is indeed a remarkable example of global greenwashing (Berlan, Carbou, and Teulières 2022) that deflects attention from more just and sustainable agroecological transformations. The purpose of

APCNF-ZBNF's legitimating discourse and public narrative has been successfully masked for far too long.

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