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Economic & Political WEEKLY

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Review of Environment & Development

A set of five papers looks at developmental action plans based on inclusive conservation models, biodiversity-based agriculture, the rise of zoonotic diseases, sustained livelihood opportunities in rural areas, and employment of technology to better document community knowledge. page 27 onwards

Wildlife Trade and the Pandemic

With illegal wildlife trade taking centre stage in the pandemic, the efficacy of imposing bans on wildlife markets as a way to prevent future zoonotic-origin epidemics is critiqued. page 13

Dalit Representation in Cinema

The Discreet Charm of Savarnas (2020) highlights casteist prejudice in Indian cinema and the need for the movement for diverse representation to be institutionalised by film industries. page 63

Popular Power in Bolivia

The Bolivian experience shows how popular movements can defend democracy, but there are also frictions between social movements and progressive governments. page 16

Faculty Position in the School of Social Sciences

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Review of Environment and Development

A set of five papers converges on the idea of sustaining and augmenting human well-being through development that is focused on biodiversity.

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Upholding the Farmers' Protest

The People's Union for Civil Liberties (PUCL) stands in solidarity with the non-violent and peaceful struggle of the lakhs of farmers sleeping under the open sky in the chill of winter on the Delhi borders. When the farmers of the country needed full support from the government due to the ongoing agrarian crisis, it has come as a shocker that the Government of India (GoI) wants to disempower the farmers completely in the interests of big corporates.

The PUCL would like to assert that the GoI must meet the demands of the protesting farmers and repeal the three new laws on farming, which were passed in Parliament in September 2020, by flouting all democratic norms. We would like to point out that these laws were passed in the middle of the pandemic without a national discussion on the proposed changes of law, which threaten to change the face of agriculture in India. It is objectionable that such far-reaching changes were ushered in at a time when the pandemic had already forcibly restricted the movement and economic activity of ordinary people.

It is evident that the farmers' struggle has moved well beyond the demand of merely protecting the minimum support price (MSP) and the repeal of the two new and one amended law on farming. It is our understanding that it has clearly emerged as a struggle for the survival of more than 50% of the Indian people who are farmers, a struggle against the corporate control of the several dimensions of farming economy and operations from production, to fair pricing, to stocking (hoarding), to markets and to retail marketing. The fear that if these laws are allowed to exist, then they would lead to the creation of landlessness, bondage and destitution of farmers cannot be lightly brushed aside, given the nature of the acute farmer and agricultural crisis that has been growing in the last two years.

The farmers' struggle also highlights the centre's violation of principles of federalism, by it legislating on a state subject without consulting the farmers or the state governments. The struggle also exposes how the laws take away legal and judicial recourse and put in place only executive redress. Finally, this struggle is also for defending the basic democratic and constitutional right of the Indian people of the right to association, the right to protest and be heard.

With the fourth round of talks between the government and the farmers having failed, it is only clear that the government will begin throttling the protest even more.

The matter of concern is that in the absence of any regulation, and with declining purchasing power of the working poor, there is also a possibility that there will be increasing exports in foodgrains, while people in India continue to remain hungry. In the past, governments have withstood the pressure of the World Trade Organization and other developed countries and given leadership to the less developed countries of the world, arguing for a peace clause, which defends its public stockholding of foodgrains for the purposes of the public distribution system (PDS). In fact, what is needed is an expansion of the MSPs and effective procurement to all crops, including millets, pulses and oilseeds, which will also be in favour of small farmers while improving nutrition, as these can then be included in the PDS basket.

We demand from the GoI the following, that:

(i) As a first step these laws be scrapped and repealed.

(ii) Cases filed against the farmers be withdrawn.

(iii) The GoI should respect the democratic right of protest of the Indian citizens and have a dialogue with the farmers exhibiting good faith.

(iv) The GoI should respect the principles of federalism as stated in the Indian constitution and engage with state governments as equal partners in governance in order to strengthen every aspect of farming and Indian agriculture so that it remains self-reliant, independent and sustainable.

(v) Lawmaking should not embolden the executive with extra powers and deny legal and judicial remedies to the

aggrieved. This increasing trend in law-making needs to be reversed.

Ravi Kiran, National President,
Jain V Suresh, National General Secretary

GDP in Education or Education in GDP?

Public attention in India has for long been focused on the target of public expenditure on education to be equivalent to 6% of the gross domestic product (GDP). This celebrated benchmark was recommended by the National Commission for Education (Kothari Commission) in 1966 and adopted in the National Education Policy, 1968, setting a target of 20 years in 1988. This target has remained ever elusive, and even the *Economic Survey 2019–20* reported only 3.1% of GDP or ₹6.4 lakh crore as the combined centre and state expenditure on education. Even then, there has not been a single attempt so far to look at the financial relationship between the GDP and the education sector in some alternative way, say in terms of a reverse measure of how much should the education sector contribute to the GDP. It is to highlight this alternative perspective that we flag how the brain drain of our STEM—Science, Technology, Engineering and Mathematics—students leads to a potential dip in our GDP, and how measures can be taken to prevent it.

The Indian students in STEM fields have been migrating abroad, especially to the United States (US), for higher qualifications like master's, PhDs and post-doctoral research, after completing their bachelor's or master's degrees in India. Subsequently, when they entered the foreign labour market, it led to loss of not only their skills but also of foreign exchange, both leading to reduction in education's contribution to India's GDP—a concretely quantifiable evidence of brain drain from India.

According to the Ministry of External Affairs reply to Question No 964 in Rajya Sabha on 26 July 2018, the estimated number of Indian students abroad until then was 7,53,000, of which 2,12,000 were in the US. In contrast, the number of foreign students in India in 2017 was 47,000 compared to 28,000 in 2012, registering a growth rate of 65% over the five years. However, as per the Ministry of Human Resource Development (MHRD) data of 2019, the number of foreign students in India was 47,427 in 2018–19, registering a 42% increase in seven years, over 33,151 in 2011–12.

Three noticeable aspects of this growth in numbers and rates are: (i) the number of Indian students abroad is much higher than the number of foreign students in India, (ii) the growth of foreign students in India during 2012–17 is higher by 5% than that of Indian students abroad, and (iii) a majority of 45% of foreign students in India in 2018–19 belonged to neighbouring countries Nepal, Afghanistan, Bangladesh, and Bhutan within the top seven countries' share of 55%. The higher numbers of Indian students abroad have led to a loss of foreign exchange in the outflow of student fees and other expenses associated with outmigration of students, not compensated by the inbound foreign students in India, leading to what Khadria calls India's "silent backwash flow of remittances."

Both India and developed countries like the US—aspiring and dominant knowledge economies of the 21st century—are trying to maintain their comparative advantage through nurturing talent in STEM fields. In the case of the US, this is evident through its high demand for STEM students, reflected in higher shares of Indian students in these fields of study in the US higher education system. In 2017–18, as high as 81% of all Indian students in the US were in STEM fields. These higher shares in STEM fields in the US higher education system, comprising the outflows of Indian students, would lead to a lower GDP of India if they were not coming back to contribute to the economic growth and development in the country through the use of knowledge gained in the US education system.

However, there are possibilities of reversing this by adopting three policy measures aimed at attaining the Sustainable Development Goals (SDGs): (i) boosting the average productivity of labour in India through engaging the returning Indian STEM students graduating abroad in the reduction of rural and urban poverty, promotion of employment-intensive technologies and overall upliftment of the socio-economic standard of living through better education and improved health; (ii) creating homogeneity in the STEM courses and degrees between foreign and Indian educational institutions for a balancing two-way flow of STEM students in the framework of GATS; and (iii) creating four educational hubs in India to leverage not only geographical but also diversified sociocultural-ethnic affinities in the four regions of east, west, south and north India that can employ and enrol the aspiring Indian STEM youth in teaching and learning at home rather than abroad. All three measures would help realise and consolidate the full potential contribution that the Indian education sector can make to the country's GDP. An index of service production in the education sector that we constructed at the instance of the Ministry of Statistics and Programme Implementation would help in measuring the changes in this contribution in quantifiable terms year upon year. This would support a convincing evidence-based claim of the education sector for higher allocations—not in nominal but real term—in the union as well as the state budgets if we needed to achieve SDG No 4 of ensuring inclusive and equitable quality education for all—not only in the basic levels of elementary and secondary education by 2030, but also in higher education, including in STEM fields, and further to stem their brain drain to the developed countries.

Binod Khadria, Narender Thakur
NEW DELHI

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Surging Reserves

Only greater stability and absorptive capacity can ensure productive use of funds.

Despite the slowdown in the economy in recent years and the body blow from the pandemic, the country's foreign exchange reserves (FER) have continued to surge for the second consecutive year. In 2019–20, India's FER went up by $65 billion taking the total stock of reserves to $478 billion. And the current fiscal year has seen reserves bloat by another $97 billion, to cross the half a trillion figure, and touch $575 billion by end November. Most probably, annual FER inflows in 2020–21 will exceed the record of $111 billion set during the global boom. The reserves offer effective protection from both domestic and external shocks and also help achieve monetary and exchange rate policy goals. Though it is difficult to assess the adequacy of FER, which is both country- and policy-specific, India's FER can now pay for more than one year of imports or repay around 90% of the external debts.

Amassing more than half a trillion dollars of FER was no easy feat. It was only in the late 1960s that FER first touched the one-billion-dollar mark. And it took almost another quarter century for the reserves to reach $10 billion. Then partly aided by the global boom, reserves accelerated and hit $100 billion in just a decade and then in another decade and a half it shot up above half a trillion dollars. So now, India's FER is the fifth largest in the world, with China topping at $3.2 trillion, followed by Japan with $1.3 trillion, Switzerland with around $952 billion and Russia with $583 billion.

But despite these gains, annual inflows into India's FER have been erratic causing the reserves to even decline four times in the last two decades. The reason for such volatility is that India's FER is qualitatively way different from that of the top four countries. While FER of China, Japan, Switzerland and Russia is mainly from the huge surplus earned in their current account, that is, the excess of exports of goods and services over their imports and remittances from non-residents, India had to depend almost entirely on capital inflows, mainly foreign investments, external commercial borrowings and bank deposits of non-resident Indians, to build its FER.

The numbers show that the annual surplus or earnings in the current account during this decade averaged $180 billion in China, $131 billion in Japan, $65 billion in Switzerland and $58 billion in Russia. In contrast, India had a current account deficit, that is, net outflows, which annually averaged $38 billion during the period. So, India's foreign exchange reserves came almost exclusively through capital inflows, which are mainly liabilities, that averaged around $67 billion annually in the current decade. This is a major lacuna as it points to India's limited ability to even utilise the available foreign capital and accelerate overall growth of the economy. Estimates show that almost around half of the net capital inflows into the country in the last few years were accumulated as foreign exchange reserves, as structural factors and slow growth, primarily due to slack domestic demand, constrained the productive use of foreign capital.

This dependence on capital flows is the main factor that causes instability to India's FER as these flows, unlike earnings from the current account which are more stable, are relatively more volatile as foreign investors, commercial lenders and bank deposits often flee at the first sign of a major crisis. For instance, the outbreak of global financial crisis saw annual capital inflows into India shrink from $108 billion in 2007–08 to just $8 billion in 2008–09. And similarly, while the entire $65 billion added to the FER in 2019–20 came from capital inflows, it almost totally collapsed to a mere $0.1 billion in the first quarter of 2020–21 after the panic unleashed by the pandemic. Almost the entire addition of $27.9 billion to the FER in this period came from the current account surplus and valuation changes, as the pandemic sharply shrunk import demand, something which has happened only twice since 2006–07.

Apart from erratic capital inflows, another issue is the low returns from the huge FER. To secure maximum returns, the Reserve Bank of India (RBI) normally invests FER funds in gold or other multi asset portfolios, mainly in dollars, euro, yen or the renminbi. Around 93% of India's FER is held in foreign currency assets and 6% in gold. And of the foreign currency assets, 60% is held in securities, 33% as deposits with other central banks and the Bank for International Settlements, and 7% as deposits with commercial banks held overseas. However, despite spreading the investment risks across such a wide spectrum, the earnings from the foreign currency assets were only 2.7% last year.

But unfortunately, any other alternate use of FER, like for financing infrastructure or setting up a sovereign wealth fund, remains a big no-no, basically due to the instability factor and also the need for safety. However, lately there have been some occasional exceptions made to this rule. For instance, the RBI now has the mandate to invest up to $5 billion in bonds of the India Infrastructure Finance Company Limited (UK) to finance acquisition of energy assets and it has already invested $1.9 billion there. Perhaps in the years to come, a more stable FER, its better management, and improved absorption capacity of the economy will permit more productive use of the funds. Until then, the huge FER will remain underutilised and basically serve merely as an insurance against domestic and external sector shocks.

Indian State and the Future of Agriculture

The government intervention puts Indian agriculture in the grip of corporates.

Surinder S Jodhka writes:

At the time of independence, Indian agriculture was an example of everything that was wrong with the economy of an "underdeveloped" country. Even when nearly three-fourths of its working population worked on its vast farmlands, served by an extensive spread of rivers and a wide range of climatic conditions, India could not produce enough food for its population. The newly independent country had to import a considerable amount of foodgrains from the "developed" countries of the First World, with the United States being the chief supplier. While the food-surplus countries of the Western world eagerly agreed to sell, or even give away food as aid, their supplies came with "conditions," unfavourable to a nation trying to restore its lost dignity after a long history of colonisation.

Though confined to a few promising pockets, the state investment in agriculture provided an accelerator and within a short period of around a decade, the country was producing enough food for its rapidly growing population. The green revolution was made possible not only by the enterprising farmers but also by the kind of investments the Indian state made in building agricultural infrastructure. From the construction of dams and canal networks to setting up agricultural universities, marketing networks and provision of cheap credit from institutional sources on a "priority" basis, the Indian state played a critical role in enabling its farmers to pursue the path of intensifying production. The idea of green revolution has since spread to other "less-developed" pockets as well, though the required investments in building agricultural infrastructure are no longer coming forth from any agency of the central or state governments.

The neo-liberal reforms of the early 1990s fundamentally changed the orientation of the Indian state towards agriculture and its farming populations. The broader orientation of the Indian economy also began to change. Once unleashed, the private corporate sector began to grow rapidly. Thus, the size of national economy expanded. But the corporate economy was largely focused on the high-end service sector, which did not generate many jobs. Unlike the "classical" growth trajectories of the industrialised nations of the global North, even when the share of India's agriculture declined rather rapidly, a much larger proportion of the workforce remained employed in agriculture. Such a decline in the relative size of agrarian economy in terms of its value addition has produced many imbalances, going beyond the sphere of income and employment. The growing size and power of the urban and corporate economy marginalised its agrarian economy in the national imagination, the effects of which began to also be felt by those working in the sector. For example, the earlier growth in agriculture had given enough incomes and aspiration to the landowning classes/castes to educate their wards, hoping that they would find employment outside the village. However, those who controlled the corporate capital preferred their own, those from the urban upper castes and urban educated individuals with the required cultural capital, leaving those coming from agrarian backgrounds in the lurch.

However, as the power and influence of the corporate capital grew, it also began to diversify its economic enterprises. Beyond the traditional manufacturing and business outsourcing in software, agriculture and food processing began to attract them as avenues of possible investments and incomes. The growing size of the urban middle class and its increasing aptitude for consumption provided a sure source of demand for processed food. Processed food products could also be exported to emerging markets abroad. To the neo-liberal policymakers of the Indian state, this appeared to be the most desirable solution for an agricultural sector complaining of crises for a long time.

Given the diversity of legal frameworks governing agricultural lands and restrictions on corporates buying or leasing in agricultural lands, they could not easily enter the agricultural economy. The only mode available for their entry into agriculture was through contract farming. Post-liberalisation India also saw global agro and food processing corporates expanding their operations. While they were already invested in supplying seeds and pesticides, they began to expand their operations to consumer goods, ranging from potato chips and tomato sauce to processed cereals and dairy products.

Contract farming operations are thus not new to India. They are legalised by the state governments under their Agricultural Produce Market Committees (APMC) or Agricultural Produce and Livestock Market Committees (APLMC). Beginning with the production of seeds to procurements of tomatoes and potatoes, a good number of corporates have been working in different parts of the country. Ranging from global companies like Nestle, Monsanto and Pepsi to the Indian corporate houses such as ITC, Reliance, Tata Rallis, Mahindra, Hindustan Unilever and Adani Group, many companies have been slowly expanding their operations. Profit in the food business has spurred an expansion of their operations in the agricultural sector.

Knowing the eagerness of the Indian state for corporate investment in agriculture, they have also been lobbying with the government for doing the required groundwork for them to enable this expansion. The new agricultural laws must be seen in this context. However, the farmers' experience of contract farming has at best been mixed. The available evidence tends to suggest that while it is easier for big farmers to work with corporate entities, the smaller farmers find it hard to benefit from contract farming and are often at the mercy of bureaucratic business arrangements. The farmers perhaps also see the new laws disturbing the existing marketing ecosystem, with which they are familiar and have easy access. That all this is done without any active consultation with the primary stakeholders creates even more anxiety and mistrust.

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Power to Transform or to Rule?

It is a general democratic belief that the extension of elections to local bodies helps achieve two distinct goals: decentralisation of power and democratisation of political thinking of both the national elite and the local citizens. Under democratic belief, the political function of the process of decentralisation of power is to progressively transform the local people into enlightened citizen who in turn will form themselves into a political community. Put differently, decentralisation does not mean power to establish rule over others, but achieve qualitative transformation. Thus, power is defined in terms of its normative thrust rather than a force that seeks to "target" certain sections of the society. Similarly, democratic processes that operate through the elections and lead to the formation of local self-government also offer national-level leaders an opportunity to enrich their understanding of the common issues that exist at the local level.

However, at one level, the entry of political leaders needs to be informed by an element of responsibility that is necessary to gain an understanding of the local material problems of the people. At another level, such leaders are also expected to offer inputs to help transform the local people into citizens who have non-partisan interest in the development of their particular region. It, therefore, becomes the moral responsibility of the political leaders to first individualise the voters by seeking their separation from the partisan and parochial inclination and maintain this separation by retaining the local focus on common issues that are accommodative of individual interests.

The participation of "national" leaders from political parties in local elections should be contingent on leaders' commitment to the cause of transforming individuals into citizens, who are capable of thinking out of the box of parochialism. For example, citizens who are vocal at the local level are certainly concerned about the need to create adequate jobs opportunities. They do talk about common questions of infrastructural development, and health and educational facilities. The robust interaction based on the genuine practice of political autonomy, both from the strange talking by the leaders and also from the parochial inclination, creates the possibility of a political community.

Creating a political community is as good as creating an intimate social sphere within which free and frank rather than communally parochial, estranged interaction is possible. But the efforts to create estranged interaction have become the part of politics that now has become "necessary." This was evident in the communal use of emotive issues in the recently concluded corporation election in Hyderabad. As the media reports suggest, the election campaign was organised mainly around communal issues.

Mutual estrangement, which forms the basis of necessary politics, ironically works out to the political advantage of both the leaders from the majority and the minority. Political interests are served by seeking to entangle the voters into communal strife. Such entanglement denies citizens from both the majority as well as minority communities an opportunity to speak on everybody's behalf. Such denial necessarily works against the maturation of robust democracy inasmuch as it discounts the efforts of those who have both intellectual as well as moral resources to think out of the constraining context. In this regard, it is necessary to recognise the argument that has been regularly made by the members from the minority against the majoritarian construction of the minority as a vote bank "exploited" by the "secularist." The "use" of democratic mode seeks to expose the parochial intention behind the capture of political power. The object of political power is driven less by the politics of structural transformation of society on an egalitarian line and more by the need to map it on electoral spaces so as to mobilise the members from the majority community. In such politics of mapping the electoral spaces, minority groups become a target or an object to capture political power. This kind of mapping of political power onto an electoral space necessarily converts power into a force that seeks to stigmatise the minority and "demonise" the opposition.

It is a paradox of local self-democracy that it opens up space for mutually exclusive possibilities of transforming the regional/local into modern by becoming self-critical. At the same time, it also lends itself to the communal politics of capturing power not to seek structural transformation but to target certain sections of the population. Imposing the communal onto the regional calls into question the ability of the people to remain autonomously active citizens who can assert political autonomy without the need to receive any inputs that are unhealthy for the growth of democracy, which is intense in its egalitarian intent. Such democracy requires it to be based on interaction that may not shun inputs coming from outside, and would insist that such inputs are not communally explosive but are critically inclusive. While estranged interaction is injurious to the healthy growth of democratic politics, using local elections to entangle voters into communal strife is unhealthy for the values of democracy.

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FROM 50 YEARS AGO

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Bunglers

The oft-repeated reasons for continued American involvement in Vietnam, Cambodia and Laos become more unreal every day. In spite of Nixon's military withdrawal plans, his Administration seems to be incapable of grasping the reality that such a withdrawal from Indochina also necessarily implies American political disinvolvement from the affairs of that region. The false hope persists that, somehow, regimes sympathetic to the Americans can be preserved in Saigon, Phnom Penh and Vientiane without much further loss of American life. In the case of Vietnam, the Vietnamisation programme is the corollary to this hope. The American authorities in Saigon continue to indulge in wishful thinking by spewing out reports about the new-found elan and aggressiveness of their allies in the South Vietnamese Army. The pacification programme is said to be succeeding as more areas are now evidently free from the Vieteong who are ostensibly on the run because the number of engagements has fallen quite sharply.

Bank Privatisation
Why, How, When?

T T RAM MOHAN

There is a buzz in the air about privatisation of some of the public sector banks (PSBs). There has been talk of privatising Industrial Development Bank of India (IDBI Bank) in financial year (FY) 2020–21. Of the disinvestment target for the year of ₹2.1 trillion, ₹90 billion was to have come from stake sale in Life Insurance Corporation of India (LIC) and the privatisation of IDBI Bank.

The media has also reported proposals to privatise PSBs that were not part of the mega-mergers announced earlier this year, namely Punjab and Sind Bank, Bank of Maharashtra, UCO Bank, Bank of India, Indian Overseas Bank and Central Bank of India.

Then, a decision is awaited on whether banking should be designated as a "strategic" sector. If it is, then there can be a maximum of four PSBs in banking. The rest will have to be consolidated or privatised.

The government has not provided any rationale for the proposed privatisation of PSBs. There is a presumption that privatising PSBs will be good for the economy, meaning private ownership is to be preferred to public ownership.

Performance of Banks

In the public discourse, one hears two arguments in favour of privatisation. The PSBs have underperformed private banks by a wide margin over the years. So, privatising PSBs will mean a more efficient banking sector. Two, the PSBs run up large amounts of bad loans from time to time and, hence, make unending demands for capital for the government. Privatising them is necessary in order to contain the demands for capital on the government. Let us take up these arguments in turn.

Most comparisons of PSB and private bank performance look at a snapshot of a small period, at times of just one year. They compare PSB and private bank numbers on standard metrics—return on assets, net interest margin, non-performing asset (NPA)/total loans, etc—and come to the conclusion that private banks (or new private banks) fare better.

A rigorous comparison of performance would cover longer periods. It would also examine whether differences between the two ownership categories are statistically significant. A number of academic studies have made such comparisons for the post-liberalisation period. These studies mostly point to a trend towards convergence in performance in the post-liberalisation period and up to the early 2000s (Ram Mohan 2014).

The divergence in performance has happened in the last decade, 2010–20, that is, after the global financial crisis (GFC). In 2010, the gross NPAs/gross advances ratio was 2.3% at PSBs and 3% at private banks. By March 2020, the position had changed dramatically: the respective numbers were 11.3% and 4.2%. The change may be ascribed to the boom in PSB lending in the run-up to the GFC of 2007–08. A high proportion of the loans that PSBs made in that period has gone bad. It could be argued that this points to poor loan underwriting and risk management at PSBs.

The reality is a little more complex. The boom in lending before the GFC was the result of lending to infrastructure (power and telecom) and related sectors, namely mining, iron and steel, textiles and aviation. These five sectors accounted for 29% of all advances at PSBs and 14% of advances at private banks. Investment in these sectors was mostly private in character and it accounted for the economic boom of 2004–08. Private investment substituted for government investment in these sectors, given the financing constraints faced by the government.

If private investment in infrastructure goes bad and PSBs face NPAs as a result, the government has to duly recapitalise PSBs. Such recapitalisation needs to be seen as deferred government spending on infrastructure, a sector that has significant externalities.

The bad loan problem at PSBs cannot be ascribed entirely to poor appraisal or risk management. In the global economic boom that preceded the GFC, there was a rush to invest and bankers everywhere too got carried along. Following the GFC, cash flows of corporates turned out to be much lower than anticipated, and this was duly reflected in a rise in NPAs. As the *Economic Survey of 2016–17* noted,

> the vast bulk of the problem has been caused by unexpected changes in the economic environment: timetables, exchange rates, and growth rate assumptions going wrong.

Other factors beyond the control of management contributed:

(i) The mining sector was affected by adverse court judgments.

(ii) Steel was affected by dumping by China and the absence of reliable fuel linkages.

(iii) Power projects and roads faced delays in land acquisition and environmental clearances.

(iv) The telecom sector was adversely affected by the cancellation of 2G licences.

In short, there was an improvement in the performance of PSBs until about 2010. Thereafter, there was a deterioration on account of the GFC, other extraneous shocks, and the fact that PSBs had taken the lead in financing key sectors of the economy. These facts point to a possible conclusion: PSBs as a category cannot be said to be chronic under-performers or incapable of reform. It is important also to recognise that, amongst PSBs, there are disparities in performance among PSBs and that generalisations about PSB as a category can be misleading.

Let us turn to the second argument for privatisation, namely the inability of the government to keep pouring funds into PSBs.

Newspapers carry screaming headlines about the capital required by PSBs. These headlines can be misleading. They indicate not the equity capital that the government needs to put in, but the total requirement

of equity (from the government as well as private investors) and bonds. The rating agency, Moody's, estimates that PSBs will need around ₹2 lakh crore of capital over the next two years, or about ₹1 lakh crore in each of the next two years. This translates into ₹50,000 crore of equity capital, of which approximately half or ₹25,000 crore must come from the government. The correct figure to look at is ₹25,000 crore and not the headline figure of ₹2 lakh crore. The requirement of ₹25,000 crore does not seem prohibitively large, given that the government has already allocated ₹20,000 crore towards PSB recapitalisation in FY 2020–21.

Critics say that since 2010, the government has pumped in over ₹4 trillion into PSBs. The amount could have been deployed for other purposes. They overlook the fact that governments everywhere have stepped in to rescue private banks as well. In 2008 and 2009, the United Kingdom (UK) government had to infuse £45 billion (about ₹4,50,000 crore) to rescue the Royal Bank of Scotland. This amount nearly equals the amount spent by India on recapitalising PSBs since the commencement of liberalisation.

The Vickers Commission in the UK estimated that financial crises impose a cost of 19%–163% of the gross domestic product (GDP), with a median cost of 63% (Vickers Commission 2011). These are costs imposed by private banking systems. The commission reckoned that if a banking crisis happened once in 20 years, the annual cost would be 3% of the GDP. So, it was worth spending 3% of GDP every year in order to prevent a crisis. India's cumulative recapitalisation cost over the post-liberalisation period of nearly 25 years would be a little over 3% of the GDP!

The notion that public sector banking systems make endless demands on the exchequer and that these demands somehow would not happen in private banking systems is a sheer delusion. The way banks are designed today, banking systems impose a cost on the exchequer quite independently of ownership. And it is the taxpayer who ends up picking up the costs even under private ownership.

So much for the "why" of bank privatisation. Next, we need to address the "how" of it. We need to judge how feasible privatisation of PSBs is in our conditions. One option is to sell a controlling stake to a private entity in India. Within the financial sector, there are not many entities that have the deep pockets to buy PSBs. Many of the leading private banks have large branch networks of their own and do not need to buy PSBs in order to extend their reach. The potential buyers of PSBs are corporate houses that are keen to enter banking.

An internal working group (IWG) of the Reserve Bank of India (RBI) has, in a recent report, raised the possibility of corporate houses entering banks. These include corporate houses that already own non-banking financial companies (NBFCs). However, the entry of corporate houses bristles with conflicts of interest, including interconnected lending. The IWG has said that the Banking Regulation Act must be amended to give the RBI adequate scope to track interconnected lending and to supervise conglomerates that may enter banking. Given the risks to financial stability, the sale of PSBs to corporate houses does not commend itself, nor is the RBI likely to rush into this territory.

A second possibility is for the government to let its equity stakes in PSBs drop below 50%. This can happen through the sale of the government stake or by the

issue of fresh capital to which the government does not subscribe. This is the Axis Bank model advocated by the P J Nayak Committee (Nayak 2014).

Those who advocate this route say that the dropping the government's stake in PSBs below 50% would free them from constraints on executive compensation as well as the purview of the Central Vigilance Commission. Bank managers would be better placed to take risks in lending and would be suitably rewarded for doing so. The government would reduce itself to a passive owner and leave it to boards of PSBs to manage the entities.

There is a problem with this approach. India lacks a culture of professionally managed firms accountable to institutional shareholders. The leading firms that we have are overwhelmingly promoter-managed. The promoter is either the government or a corporate house. If neither is present in a bank, the responsibility for monitoring managers falls entirely on the boards.

Performance of Boards

The performance of the boards fails to inspire confidence even in advanced economies where institutional investors are relatively active. It is unrealistic to expect much of boards in a context such as ours where institutional investors are seldom as active. Boards in India have failed to prevent failure, as at Global Trust Bank or Yes Bank. The board was found wanting even at a leading bank such as ICICI Bank. At Axis Bank, the change to passive ownership by the government happened when the bank was relatively small in size. We lack the confidence to entrust PSBs, in general, to professionally managed boards. At best, we could experiment with this approach in the case of two or three PSBs and watch how things pan out over four or five years.

The last question relates to the "when" of privatisation. The timing of the sale of public assets is important if the government is to realise the best price. Today, most of the PSBs are trading below book value, thanks to the overhang of NPAs. Selling PSBs at distress prices will not only spell poor revenues for the government, it is very likely to raise allegations of a "scam" that will paralyse all decision-making related to PSBs. At the very least, the government should wait for the economy to recover from the impact of the pandemic. That would give PSBs some time to address their NPA problem and improve their valuations.

Whichever way you look at it, any large-scale privatisation of PSBs appears fraught. In the medium term, there is little alternative to improving governance at PSBs. This requires steps that are by now well-known: getting top appointments at PSBs right and on time, providing adequate tenure to chief executive officers, giving directions to the PSB management through government nominees on the board and not directly from the Department of Financial Services and ensuring that independent directors on PSB boards are of good quality. The good news is that some progress on these has already happened. It needs to be continued.

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Interconnectedness of Illegal Wildlife Trade and COVID-19

SHREYA SETHI

Since its outbreak, the COVID-19 pandemic's interlinkages with illegal wildlife trade have caught a lot of attention and been touted as a primary cause. Dwelling on the carrier species of coronavirus that have been implicated and the channels of zoonotic spillover, the policies implemented to curb bushmeat consumption with incomplete ramifications to curb illegal wildlife markets are critiqued. The urgent need to address the problem is highlighted, requiring significant enforcement efforts at the local and national level along with transnational cooperation to make them successful. There is a need for alternative coordinated solutions for the COVID-19 vaccine which ironically finds its origin in a wildlife product.

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The impacts of the coronavirus disease (COVID-19) have been felt worldwide. The disease first presented itself in December 2019 as a pneumonic manifestation from an unknown origin in Wuhan, Hubei province of China (WHO 2020a). Spiralling from an epidemic into a pandemic, as of 7 December 2020 it has infected 67 million people globally and proved fatal for 1.53 million (John Hopkins Database 2020) with no end in sight as some countries face the second or the third waves of infection. Social distancing measures, quarantining and lockdown continue to be the only public tools available to contain the spread of the disease and to reduce the pressure on healthcare facilities. Even with some allopathic drugs showing promising results as a cure, assuming a "normal life" without a vaccine could take a while.

Predecessors of COVID-19 can be traced back to the Spanish flu (1918–1920), Asian flu (1957–1958), HIV–AIDS (1981–to date), H1N1 swine flu (2009–2010), Ebola (2014–to date), and Zika (2015–to date). One common theme that emerges among pandemics and epidemics is their spread through wild animals. As much as 61% of the total known 1,451 human pathogens are from zoonotic origins (Cunningham 2005). The illegal wildlife trade (IWT) literature is rich with the references of zoonosis from wildlife. Agricultural intensification, climate change, deforestation, hunting, wildlife trade, urbanisation, and global travels often drive repeated spillovers of zoonotic pathogens to humans (Daszak et al 2001). The consumption of infected animals as part of traditional hunting practices (Leroy et al 2004), for food and for medicinal value, has been associated with the emergence of zoonosis.

Consumption of wild meat has been a part of human lifestyle since the time of the hunter-gatherer communities. But the reason for large outbreaks in current times is globalisation, which intensifies the rate at which diseases can travel between countries, coupled with the clandestine nature of wildlife markets, which defy sanitary measures. This common thread of globalisation of an epidemic can have a domino effect on economies and a butterfly effect on climate change.

Origin and Spillover

Since the start of the pandemic, studies have been focused on identifying reservoir wildlife species of coronaviruses (CoVs). One of the most detailed research papers by Decaro and Lorusso (2020) confirms that bats and rodents are possible reservoirs of alpha-coronavirus and beta-coronavirus and birds for gamma-coronavirus and delta-coronavirus. Also, CoVs can jump from their natural reservoirs to other animals, including humans, but human transmission often requires an intermediate host.

The origin of COVID-19 in wildlife trade has been irrefutably accepted as the prime cause of the spread of disease (even with the conspiracy theories of it being a genetically engineered virus). New research in the area of SARS-CoV 2 found the virus strain in bats and pangolins (Lam et al 2020). As many subspecies of bats and pangolins exist, this raises the question about which specific subspecies could be possible hosts and what their point of contact with humans was to transmit a virus. It is important to note that both of these species are wild and nocturnal. Thus, these species being found in close contact with humans would only imply their harvest from the wild or encroachment of wildlife habitats for satisfying anthropogenic needs. Wang et al (2006) also highlight that people in regular contact with wild animals may have been infected by other less virulent strains of coronavirus and the emergence of a pandemic from the live wild animal trade market was just a bubble waiting to burst. Understanding the starting point would eventually help in implementing mitigation measures to prevent such pandemics in the future. An extensive doctoral research thesis (Chmura 2017) points

out that "Detection of CoV was highest in the following species: King Horseshoes Bat (Rhinolophus rex (63.6%)."

Adding to this, another study by Lam et al (2020) points out:

> observation is consistent with the fact that ACE2 sequence similarity is higher between humans and Sunda Pangolins (Manis javanica) (84.8%) than those between humans and Horseshoe Bats (Rhinolophus sp.) (80.8%–81.4%).

The diversity of coronaviruses in bats can also be due to multiple species roosting together and thus providing many opportunities for continuous shedding of viral particles within and between species (Lam et al 2020). Other than bats, pangolins are confirmed reservoirs of CoV. Out of the eight pangolin subspecies, the Malayan/Sunda Pangolin[1] is a critically endangered species as per the International Union for Conservation of Nature (IUCN) Red List and Appendix I listed in Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Further, the presence of alpha-coronavirus (subspecies Minovirus) in farmed minks[2] (*Mustela lutreola*) was acknowledged earlier (Vlasova et al 2011) but more recently, mink to human transmission of CoV took place in the Netherlands in mid-April (Brulliard 2020) and Denmark in June (WHO 2020b). This led to the culling of minks in millions, raising serious questions about animal welfare.

Instead, optimistically, we can leverage this as a chance to pivot to more humane and sustainable livelihood choices in the future. The trade of livestock, wildlife, and animal products is a complex process, but only when it is legal is it bound by the rules of the World Trade Organization's sanitary and phytosanitary measures. Regulations relating to the movement of wildlife cover animal health, animal welfare, and international movement of endangered species, and the detailed guidelines for the same are given by CITES, Convention on Biological Diversity (CBD) and the IUCN. As most of the wildlife trade is clandestine, it surpasses all such regulations. There is evidence that legislation, conventions, and global conservation efforts have successfully reduced wildlife trade, but local or national involvement is necessary to achieve this (Biggs et al 2017) along with strengthening enforcement and international cooperation (Zimmerman 2003).

IWT and Efficacy of Bans

After the outbreak of COVID-19, with immense pressure from international bodies, China released a CITES notification on 5 March 2020 stating the elimination of wild meat to safeguard people's life and health, emphasising activities involving wildlife trade as prohibited and a punishable offence beyond the maximum prescribed in the wildlife conservation law of China. The notification adopted on 24 February 2020 by China's Standing Committee of the National People's Congress states:

> a) all terrestrial wildlife, including those of significant ecological, scientific or social value and those from captive-breeding facilities should be prohibited from being used for food; and b) hunting, trade-in, or transporting all terrestrial wildlife from wild be prohibited, were they to be used for food.

It seems like a positive step towards preventing another epidemic or pandemic, but the use of the term "food" curbs its scope. Subsequently, on 4 March 2020, the National Health Commission released the COVID-19 Diagnosis and Treatment Protocol (Trial Version Seven) (Environment Investigation Agency 2020) stating the use of traditional Chinese medicine (TCM) Tan Re Qing injections. The key ingredient of Tan Re Qing is a combination of bear bile powder, goat horn *(Capra Hircus Cornu)*, Japanese Honeysuckle (*Lonicerae japonicae Flos*), Forsynthia Fruit (*Forsythiae Fructus*) and Radix Scutellariae (*Scutellariae Radix*) (Qiao et al 2018).

Bear bile powder[3] is mainly harvested from the Asiatic black bear (*Ursus thibetanus*) which is a vulnerable species (Garshelis and Steinmetz 2016). Further, to protect the species it has been listed under CITES wherein Asiatic black bear bile (farmed or wild) is illegal, but, despite these legislations, the trade continues between China, Republic of Korea, Japan, Taiwan, and all of the Asiatic black bear range countries in South East Asia (Foley et al 2011). The pandemic having possibly spread through wildlife trade, it is ironic that China quoted the use of TCM medicine consisting of an endangered species to cure the disease. This pandemic should have been a wake-up call for the world to focus efforts on elimination of IWT, as it seems to have failed to catch China's attention regarding the same.

Wildlife trade has taken centre stage in environmental discussions, with strong suggestions regarding imposing a blanket ban on wildlife markets as a way to reduce the possibility of another epidemic or pandemic arising out of zoonotic diseases. This leaves many questions unanswered regarding the efficacy of a ban and its enforcement. The illegal wildlife trade markets are clandestine, with too few wildlife seizures to indicate the actual volume of trade globally, and have thrived even after numerous episodes of epidemics. Though this pandemic is much larger in scale, whether would it lead to more concentrated laws and policies to control or shun wildlife trade is to be seen.

Business-as-usual scenarios were evident in 2020, when Shijiazhuang custom officials of Hebei Province in China seized a wildlife consignment containing specimens of the hawksbill turtle (*Eretmochelys imbricata*), rhino and antelope horn, ivory and dried seahorses (*Star* 2020a). Custom officials at North Port, Port Klang, Malaysia had also seized a pangolin scale consignment weighing 6,160 kg (*Star* 2020b). Operation Thunder 2020, spearheaded by INTERPOL and World Customs Organization, led to one of the largest seizures of 2,000 protected wildlife and forestry products out of which 1 tonne of pangolin scales were recovered (Xinhua 2020). This shows little or no difference the pandemic has had on the wildlife trade chains and exploitation of the lockdown for moving more wildlife products globally.

On a more positive note, on 20 March 2020, Malawi's Department of Parks and Wildlife (DNPW) banned bushmeat consumption, as it poses a health risk, along with declaring poaching and trading as a criminal offence (Kapindu 2020). Zisiqiao in China, a village christened as the "snake village" is an informal snake factory[4] complete with a "snake culture" museum as a tourist attraction. This village is deserted as there is mounting fear among people due to the pandemic; the village chief expects that the village would have to look for alternative professions even after the pandemic is controlled

(Stanway 2020). Also, snake trade has been banned under the wildlife laws of China since 26 January 2020 (Yu 2020). These small victories for illegal wildlife trade and bushmeat consumption might go a long way in shaping the future of conservation policies.

Aftermath and Impacts on IWT

A recent report by the Basel Institute of Governance (2020) summarises a few of the key implications of this pandemic on illegal wildlife trade, but how these claims would unfold will be seen as and when the events happen. First, poaching could increase where local communities thrive on wildlife tourism for income, which would make them more susceptible to the global poaching nexus. Second, IWT would shift online due to new stricter enforcement measures, thus, making it even more difficult to monitor. Third, wildlife "bans" will create new illegal business opportunities, including selling or renting legally obtained wildlife trade permits and licences and laundering of illegal products as legal. Finally, as passenger air travel has been limited, it would close down one of the smuggling channels, which would shift trafficking to other known networks, which should become easier to track with adequate enforcement efforts.

We are still amidst the pandemic and there are many unknowns, and while studying the drivers of illegal wildlife trade even normally is a very complex issue, a pandemic stemming from it adds a new dimension to this existing problem. Digging deeper, "a global lockdown" could have different implications. A lockdown was expected to slow down the movement of wildlife products through its trade chains and the pandemic itself could have added the element of fear amongst its buyers, which could work as a positive deterrent for IWT. Yet, the data shows there is a spike in illegal wildlife seizures, and pangolins, the very species that has been identified as the reservoir of CoV, continue to be traded for traditional medicinal uses.

Undeniably, the pandemic has bought the issues of illegal wildlife trade to the forefront of international policy agendas, but advantages of the same are yet to be seen. There is a need for more in-depth scientific research, behavioural changes and providing alternatives to people living off wildlife as a source of protein and income, which would avoid driving the trade further underground or ending up with habitats being converted to other uses. In addition, a blanket ban on bushmeat might not be the correct approach as it might deprive the local traditional communities their source of protein. Drawing from the example of India, the hunting of wild animals irrespective of its end use was banned for all Scheduled Species as per the Wild Life (Protection) Act, 1972 (amendments of 1991), but the consumption of wild meat continues despite the strict enforcement efforts. Instead of an all-pervasive policy across all countries, there is a need to look at the problem of zoonotic and wild meat consumption case-by-case, while possibly implementing a blanket ban on species used as pets and for their aesthetic value.

As the world eagerly awaits a vaccine as a hope and leap of victory over COVID-19, the origins of the vaccine could not have been more ironic. Squalene, an adjuvant[5] to be used in the vaccine is derived from shark liver oil, while alternatively it can be extracted from plants as well. This ingredient has been found safe and effective in vaccines for MERS-CoV and SARS-CoV (Macdonald and Soll 2020). Shark liver oil is used in cosmetics around the world, but the scale of the demand for the COVID-19 vaccine and the comparative price advantage of shark liver oil to non-animal-based adjuvant could push many endangered species closer to extinction. One-third of the shark species harvested for shark liver oil have been assessed as threatened by the IUCN Red List with population status unknown or decreasing (Macdonald and Soll 2020).

There can still be coordinated efforts by the pharmaceutical and medical fraternity to use non-animal-based squalene, especially as it would require fewer approvals and will ensure that the goals of environmental sustainability and public health are equally met.

NOTES

1 Sunda pangolin has a geographical distribution ranging from Southern China across the mainland and islands in South East Asia (Lee et al 2018). A major threat leading to a decline of the species is its hunting for local, subsistence level consumption, as a source of protein, and for international trade in skins, scales, and meat. Skins have been used to manufacture boots, shoes, and other leather items while the scales have been used, either in whole or powdered form, in the preparation of traditional medicines amongst other uses (Challender et al 2014).

2 Minks are farmed for fur, while Denmark is the largest world exporter of mink with 40% of global mink production, most of which is exported to China and Hong Kong.

3 Bear bile has been an important component of traditional medicine in eastern Asia for millennia. The first written account of such use was recorded in the first pharmacopeia of China in 659 AD. Bear bile is used in Traditional Chinese Medicine (TCM) for reducing fever and inflammation, detoxifying the liver, arresting convulsions, improving eyesight, and dissolving gallstones (Garshelis and Steinmetz 2016).

4 Snakes are bred by local villagers as their main source of livelihood, in the backyard to be sold to restauranters and/or to traditional medicines traders. Close to 1.5 million snakes are incubated annually.

5 An adjuvant is a vaccine component that enhances efficacy by increasing the human immune response and the potency of antigens, while promoting antigen transport and uptake in the immune cells (Macdonald and Soll 2020).

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Return of the Left in Bolivia
Social Movements and Popular Power

TATHAGATAN RAVINDRAN

The return of the left to power in Bolivia is a product of the role played by social movement organisations of workers, peasants and indigenous people in organising militant resistance to the usurpation of power by the extreme right wing.

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On 12 November 2019, Evo Morales was on an air force jet on his way to exile in Mexico. He stepped down when the chief of the armed forces "suggested" that he resign after protests over unproved allegations of electoral fraud. Nearly a year later, he returned to Bolivia through the land frontier accompanied by Alberto Fernández, the President of Argentina. From there, accompanied by a three-day 800-vehicle caravan, stopping at various points, including Orinoca, the rural community where he was born and raised, Morales went to Chapare, the place where he came of age politically as the leader of the coca-growing peasants. A day earlier, the candidate of the Movimiento al Socialismo (Movement Towards Socialism–MAS), Luis Arce Catacora, the former finance minister of Morales was sworn in as the new President of the country after a landslide election victory in the presidential elections.

What happened in Bolivia during the last year offers very important lessons and opens up many questions to reflect upon. In an article published in the *Economic & Political Weekly* in June 2020, I discussed the coup that took place in Bolivia in November 2019 that led to the ouster of Morales and the usurpation of power by the extreme right-wing forces in the country (Ravindran 2020). The article revealed how the interim right-wing government with minuscule popular support, backed by the military and the United States (US) imperialism, continued to aggressively pursue neo-liberal policies in a blatantly dictatorial manner. I argued that the Bolivian experience thus reinforces the need to re-theorise the relationship between neo-liberal capitalism and democracy, a task of immense relevance in the context of the rise of right-wing authoritarianism in various parts of the world. Here, in the context of the defeat of the same right-wing forces after a year of militant popular resistance, I take up another closely related question: How can popular forces defend democracy against all odds?

Repressive Right-wing Rule

Bolivian social movements have been well known among progressive forces all over the globe for their incredible success in organising extraordinary mobilisations. Between 2000 and 2005, popular mobilisations were able to force the resignation

of two Presidents and veto the constitutional succession of another. The election of Morales in 2005 was the product of these popular struggles. Analysing the cycle of mobilisations from 2000 to 2005, Forrest Hylton and Sinclair Thomson (2005) wrote, "If Latin America has been the site of the most radical opposition to neoliberal restructuring over the past five years, Bolivia has been its insurrectionary frontline." Bolivian social movements and popular forces have done it again! They defeated an extreme right-wing racist dictatorial regime which enjoyed the full support of the armed forces and US imperialism with the sheer force of mobilising, occupying the streets and organising blockades.

Ever since the usurpation of power by extreme right-wing forces, severe repression of dissent and intense racist backlash had become the order of the day in Bolivia. Just hours after the resignation of Morales, the organisers of the coup removed the Wiphala, the flag of indigenous self-determination and burnt it. This act had heavy symbolic implications.

The Wiphala was officially incorporated as a national symbol by the Morales government. It flutters along with the national tricolour flag on all official buildings. For most indigenous sectors, the burning of the Wiphala represented an attack on all the advances the country had made on the front of racial justice. Thousands of protesters from the predominantly indigenous city of El Alto and rural indigenous communities landed on the administrative capital La Paz, with Wiphalas in hand. Some of them chanted, "Civil war now! Civil war now!"

By then, Jeanine Áñez, the opposition senator had self-proclaimed herself interim President with the support of less than one-third of the members of the senate. She wasted no time in letting loose severe repression on the protesters. During the presidency of Áñez, Bolivia witnessed the suspension of basic democratic rights. According to official figures published by the Ombudsman's Office, 37 people were killed and 770 injured in the repression of the protests against the coup.

On 15 November 2019, in a peaceful march, hundreds of peasants from the tropical region of Cochabamba were mobilising towards the administrative capital La Paz. While the military asked for time to give them permission to continue with the march, the police launched tear gas and the military began to attack the defenceless population with bullets, both from the ground and from the helicopters. During the same days, residents of the Senkata neighbourhood in El Alto imposed a blockade on the gas refinery in their neighbourhood. The Áñez government dispatched the armed forces that began firing indiscriminately at the protesters without prior notice, killing nine of them.

On 24 November 2019, the legislative assembly where the MAS had a two-thirds majority unanimously approved a law to conduct elections within 120 days and dialogues were also held between the government and social movement organisations. The guarantee of new elections temporarily demobilised the popular sectors.

However, the Áñez government soon received a boon from heaven. It was the COVID-19 pandemic. As the first cases of COVID-19 were detected in Bolivia, the government declared a national quarantine which dealt a heavy blow to the indigenous popular sectors who depended on commercial activity in the informal sector to make ends meet. However, conveniently glossing over this fact, the government not only left the most vulnerable sections of the population in complete abandonment but also utilised the opportunity to intensify their campaigns of racial terror. Indigenous neighbourhoods in the cities that were the major focal points of resistance to the coup were specifically chosen for the enforcement of the rigid quarantine and tanks were sent in to control the population. Protests broke out in some places like the southern zone of the city of Cochabamba demanding an end to the rigid quarantine, subsidy on electric bills and the implementation of a presidential executive order that postpones credit instalment payments to banks. The government sent helicopters and military tanks to launch tear gas on entire neighbourhoods.

Despite all performances of high-handedness in enforcing the quarantine, Bolivia had one of the highest per capita mortality rates due to COVID-19 in the globe (Kurmanaev et al 2020). The extremely inefficient and corrupt management of the pandemic by the government was clearly visible. Nevertheless, this was hardly surprising. The greater the horrors of the pandemic, the government had more excuses to postpone elections and hang on to power. Taking advantage of the spread of the pandemic, the Áñez government, in collusion with the Supreme Electoral Court revealed her intentions of endlessly postponing the elections.

Popular Resistance

In August 2020, when the elections were postponed for the third time, the social movement organisations, including the federation of worker's unions, and the indigenous and peasant organisations declared an indefinite strike. On the first day, 75 strategic points throughout the length and breadth of the country were blockaded. During the next few days, the number of blockaded points increased to 128. Gradually, the protesters went beyond the initial demand of not postponing the elections and called for the immediate resignation of Áñez. They criticised the handling of the pandemic by Áñez and the decision of her Minister of Education of arbitrarily closing the school year. Fernando Guarachi, the leader of the Federation of Worker's Union declared, "when the dictatorship becomes a fact, the revolution becomes a right of the people" (Bustillos 2020).

Knowing that another military action would escalate the situation beyond control, the government desisted from using brute force against the demonstrators. In some places, they used paramilitary groups to attack the protesters. However, the strategy proved to be ineffective as the former were heavily outnumbered by the latter. The Minister of Government (Home Affairs) Arturo Murillo repeatedly threatened the protesters that they would begin to break the blockades anytime and that they already had stocks of tear gas that would last for six months. Radical indigenous peasant leader Felipe Quispe responded to that threatening statement of the home minister by affirming that the government will eventually run out of tear gas but the protesters will never run out of stones to blockade the roads (Kawsachun Coca 2020).

The unabashedly dictatorial and overtly racist character of the Áñez government

united indigenous-popular sectors in Bolivia. In one of her speeches, Áñez said that the right-wing parties need to form a united front to prevent the "savages" from returning to power (*Pagina Siete* 2020a). "Savage" is a heavily loaded term in Bolivia as it has been historically deployed in reference to the supposed backwardness of indigenous people. In a similar vein, during the general strike of August 2020, Romulo Calvo, the president of the Civic Committee of Santa Cruz called the indigenous protesters "human beasts unworthy of being called citizens" (*Pagina Siete* 2020b).

It seemed that the mobilisation of people during the general strike would be unstoppable. However, the leadership of the MAS party opted to negotiate with the Supreme Electoral Court and accepted the postponement of elections. However, a new law was promulgated that set 18 October as the unmovable deadline for holding the elections.

There were serious doubts on the possibility of transparency in the elections. Questions were raised on the impartiality of the president of the Supreme Electoral Court Salvador Romero who was appointed by Áñez and had a previous history of collaborating with the US state department (according to WikiLeaks releases). He was also the director of the National Democratic Institute in Honduras when the same organisation oversaw the presidential election in the country in 2013, which was widely reported to be fraudulent in favour of the right-wing candidate Juan Orlando Hernández.

Social movement organisations set up their own systems for controlling the elections. The MAS organised a parallel system of computing results to cross-check with that of the Supreme Electoral Court. When the vote count began, representatives in counting centres started taking photos and videos of the vote tally records and posting them on social networking sites. This level of organisation rendered impossible any manipulation of the results.

Arce, the presidential candidate of the MAS won the elections with over 55% of the votes. The MAS also won majorities in both houses of parliament. Commenting on the election victory, radical indigenous peasant leader Felipe Quispe said, "We showed that the savages, shitty Indians and human beasts are the majority."

Challenges and Frictions

Arce assumes the presidency in highly difficult conditions. The impact of the pandemic and economic mismanagement by the Áñez government has left the economy in dire straits. As the finance minister in the Morales government, Arce had implemented economic policies that broke with neo-liberal orthodoxy. For instance, the partial nationalisation of gas in 2006 facilitated the increase in public investment and a significant reduction in poverty and inequality. Arce is likely to continue along the same lines. To kick-start the economy, Arce plans to prioritise the generation of internal demand. For that purpose, through a decree, he has already authorised direct cash transfers to the most vulnerable sections of the population.

Arce also intends to increase the diversification of the Bolivian economy as dependence on hydrocarbons is unsustainable in the long run. One of his major plans is to invest in import substituting industrialisation. As part of this plan, he plans to begin the production of renewable ecological diesel that is projected to replace the import of diesel and increase reforestation. Another priority is the industrialisation of the lithium reserves in Bolivia through the installation of 41 plants, 14 of which would be dedicated to the production of batteries and energy.

The strategy of the Morales government as well as some other new left governments that were part of the pink tide in Latin America was to increase the royalties that the multinational corporations engaged in extractive projects pay the state and then use the same resources to increase public investment, without significantly affecting the class interests of the domestic economic elites. Conditions of economic crisis necessitate bolder decisions. Arce has already laid out his plan of taxing the richest 0.01% of the Bolivian population for redistributive public investment.

The victims of the Áñez government are clamouring for justice. The Inter-American Commission on Human Rights has already sent a team to investigate all human rights violations between the months of September and December 2019. On 24 November 2020, the police arrested the military general linked to the massacre of Sacaba, sending a signal that the massacres and other human rights violations perpetrated during the coup will not remain in impunity. In the following days, hundreds of "passive" military personnel (those who are retired or in the process of retirement) protested against the "persecution" of the armed forces by the government. Given that throughout the history of Bolivia and Latin America in general, the armed forces exercised an extra governmental veto power, such manifestations are worrying. However, Bolivian history bears testimony to the fact that social movements have also exercised the same veto power to counterbalance the extraconstitutional strength of the armed forces. In that context, if the MAS government remains determined to go ahead with the process of investigation and trial for those responsible for the massacres and grave human rights violations, their only steadfast ally would be the social movements. After all, the social movements were the ones who defeated the coup and brought the MAS back to power.

The Bolivian experience reveals the crucial role social movements can play in safeguarding and strengthening democracy. By organising radical anti-neo-liberal mobilisations from 2000 to 2005, social movements had brought the MAS to power. In 2020, they frustrated efforts of the oligarchic right-wing forces and their imperialist allies to restore the most rabid form of racial neo-liberalism in the country.

Nevertheless, the relationship between the MAS and the social movement organisations during this contentious period in the country's history has also been marked by frictions. There were three specific moments when the MAS leadership took decisions that diverged from the demands of the social movement organisations. First, while the social movements wanted David Choquehuanca as the presidential candidate, the MAS leadership chose Arce and Choquehuanca was made the vice-presidential candidate. Second, during the general strike, the social movements wanted to continue the mobilisations and force the resignation of Áñez but the MAS negotiated

with the Supreme Electoral Court and the Áñez government to approve the postponement of the elections. Third, after the victory of the MAS in the elections, while social movement organisations demanded that members of the cabinet be chosen from within their ranks, it did not happen. Many of the newly appointed ministers are technocrats rather than social movement leaders.

This also has a racial dimension as indigenous representation in the cabinet is restricted to ministries such as Culture, Education and Rural Development, and vice ministries such as Decolonisation, Co-ordination with Social Movements and Equality of Opportunity. With the exception of external affairs, most strategically important ministerial positions are occupied by technocrats or non-indigenous left intellectuals. Radical indigenous groups pointed out that it is a stubborn repetition of a historical tendency where indigenous people are the ones who always sacrifice lives in revolutionary struggles but do not hold positions of power later.

During the presidency of Evo Morales, some radical indigenous leaders were vehement critics of his government as they saw that the participation of indigenous people in the higher echelons of the MAS party and the state machinery were highly disproportionate in a country with a majority indigenous population. They denounced the reproduction of subtle racism within the MAS administration headed by the first indigenous President in the history of the country. However, the unabashedly racist and dictatorial character of the Áñez government and the organisers of the coup made many of them declare public electoral support to the MAS. Yet, once Arce appointed his ministers, the same critiques of the previous MAS government reappeared and some of them accused the President of betraying those sectors who laid down their lives in defence of democracy. For instance, Felipe Quispe who played an active role in the mobilisations against the Áñez government and supported the MAS in the presidential elections expressed his protest asking, "Is this what we struggled for?"

The future of progressive forces and radical democracy in Bolivia depends to a large extent on how these contradictions are dealt with. The Bolivian experience offers lessons not only on how the power of social movements can defend democracy but also gives a warning on how contradictions between social movements and progressive governments can debilitate and endanger hard-won democratic rights.

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V N Datta
A Student's Reminiscence

SUDHIR CHANDRA

The author recounts his memories as the student of late historian V N Datta. His way of life and deep scholarly pursuits have left an indelible mark on the author's mind.

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VN Datta, Professor Emeritus of History, Kurukshetra University, breathed his last on 30 November 2020. He was 94. His long life was what, by any standards, would be judged as happy, fulfilling, and very productive; except for his very last years when an unsuccessful hip surgery kept him increasingly confined to the bed and in permanent pain which could any time become excruciating. The person who, unaffected by advancing years and an unfortunate limp, would—exemplifying the life of the mind—everyday be the first reader to enter Delhi's India International Library, was thus cruelly confined.

The life of the mind, however, never left him. Indeed, it remained his sole succour in the midst of that helplessness. Meeting him even during those last painful years was intellectually scintillating. He would probe you with Socratic questions about what you were reading, writing and thinking, and leave you with something new to think about. Often it would be a question you had not thought of before. He was a great believer in the efficacy of questions. Answers were perennially provisional.

In this day of the internet, those interested may obtain on their own, basic information about Datta's professional achievements. That leaves me free to talk about the person whose being what he was made those achievements possible. Also, knowing the person would indicate how he, a loner who eschewed all camps and kept pursuing his muse in the isolation of a small university campus, achieved all that he did.

Reminiscences spanning 57 years rise up as I think of that person—Datta Saheb as I came to call him from the very first day. A most unlikely relationship began that day. An awkward small-town youth, I was assailed by an acute sense of my lack of refinement as I faced this handsome, Cambridge-returned, highly cultivated man in his beautifully maintained university bungalow. He had seen my application for a scholarship in his department, and asked me informally to come and see him. As I was taking leave of him, to return to Muzaffarnagar from where I had come, Datta Saheb told me that the daughter of a friend of his was also an applicant for the same scholarship. He would try and persuade the university authorities to grant two scholarships. If he did not succeed in that, he assured me, I would get the scholarship. Which is what happened.

That was my first introduction to Datta Saheb. He, belying the general trend, would not be swayed by extraneous considerations. I also discovered that first day another trait that made him so special. He made it a point to tell me that the subject I was to work on—the background to Indian nationalism during 1858–85—did not fall within the area of his expertise, for his research had been on the practice of Sati. After a point, therefore, I would have to depend on myself. Not being spoon-fed, he said, could even strengthen me as a researcher. Be that as it may, he assured me, he would always be there to save me from falling into traps.

Love for Literature

Datta Saheb was as good as his word. Not only during my formal apprenticeship under him, but all along. In fact, he did much more. Again, all along. He kept planting new ideas in ways that were not always perceptible to me during the planting. One such planting came through his insistent valorisation of literature. The remembrance of his father as an Urdu poet and his own MA in English literature instilled in him an abiding love for literature. This was also evident in, and enforced by, his friendships. At Cambridge he and Harivansh Rai "Bachchan" became such good friends that Bachchan dedicated one volume of his "autobiography" to "Vishwanath and Kamala Datta." He was also friends with stalwarts of literature, Krishna Baldev Vaid and Krishna Sobti, and the Dogri writer Shivnath ji, who was his friend from boyhood and married Krishna Sobti. Love of literature, apart from other things, was what made Datta Saheb bond with the likes of Mohammad Mujeeb and T N Madan.

I did not know it then, but in retrospect I can see Datta Saheb's influence on my decision to try and understand solely through literature the nature of the social consciousness that emerged in colonial India.

Datta Saheb was an avid and cultivated reader. "Off the Shelf," his long-lasting feature in the *Tribune* bears ample testimony to his varied, vast, and constant readings. He was the one who first told me about major historians like Lewis Namier, Herbert Butterfield, and Fernand Braudel. He also, at the same time, impressed upon me the importance of often neglected technical details. He sat down with me to have me memorise the order of citation then current in academic historical writing, and made me aware of the importance of following one manual of style.

Mention of the *Tribune* brings to mind another special characteristic of Datta Saheb's sensibility. He was singularly free from that besetting sin of scholars which way back in the 19th century, William Hazlitt had perspicaciously diagnosed as the ignorance of the learned. If Datta Saheb wrote regularly for the *Tribune*—actually he had sporadically written for it even during his student days in Lahore—the matter did not end there. It *ipso facto* led him to forge a deeper relationship with the paper, to familiarise himself with its history and politics. That is why, undaunted by advancing years, he began his research on a comprehensive history of the *Tribune*, completing it when he was 85. And he did that with the same ardour, rigour, and devotion that had gone into his previous works.

Of Humane Sensibilities

The first to beckon Datta Saheb thus was his home town. It inspired him to produce a masterpiece, *Amritsar: Past and Present*, that remains as yet unrivalled. Then it was the town that he had made his own and got his daily bread from. The product this time, in collaboration with H A Phadke, was *History of Kurukshetra*.

No worthwhile local history is possible without an element of genuine love for the subject. It must, at the same time, remain unvitiated by parochial affects. Datta Saheb, naturally endowed as he was with a cosmopolitan sensibility, was able to maintain that balance. That balance is what enabled him, an Indian belonging to Amritsar, to be detached even in his study of the massacre at the Jallianwala Bagh, an event vis-à-vis which, let alone an Indian, any person with a modicum of sensitivity should find it difficult to be balanced.

Maybe he got it from literature, especially from his deep engagement with William Shakespeare. Datta Saheb had a keen sense of the pervasiveness of the base, the mean, and the ignoble. The time now, he told me more than once, was to study human evil. He also told me, more than once, that the character he admired most in Hindu mythology was Hanuman, the embodiment of wisdom and—when commanded by that wisdom—complete surrender.

The best of us do not always manage to be equal to their finest conceptions. Emmanuel Levinas proposed that forgiveness was nothing if it could not forgive the unforgivable. But the Jewish philosopher could never forgive Martin Heidegger because of the latter's anti-Semitism. Datta Saheb may not always have conformed to the high standards he had set for understanding and writing history. But never ever was his humane sensibility soiled.

It was not fortuitous that as a student at the University of Lucknow he became Dhurjati Prasad Mukerji's blue-eyed boy, and at Cambridge that of Herbert Butterfield.

Engagement with Gandhi

The rush of my reminiscences will not stop. But I must stop. Before I do, here are three gems from my master to illustrate that he never ceased guiding me and was my supervisor well into my advancing old age. One day, seeing me carry some books, Datta Saheb asked what I was doing. Told that those were books on Gandhi, on whom I wanted to write something, he remarked: "Remember, the best on Gandhi is Gandhi." Some months later, having enquired how my work was progressing, he said: "Gandhi was before his time." The first of these mantras shaped my *Gandhi: An Impossible Possibility*; the second forced the book to raise a question that could prove critical for our future: Will humankind ever be contemporaneous with Gandhi?

The third reminiscence demands a radical re-examination of the act of writing history. One afternoon, a visibly agitated Datta Saheb took me to the India International Centre restaurant. He had just returned from the Nehru Memorial Museum and Library. There he had seen on the front page of the *Tribune* a photograph of Gandhi standing at the door of his railway compartment. The photograph carried the caption: "Die with the dying Lahore." This was Gandhi's appeal to the Hindus and Sikhs of Lahore—as also to the minorities everywhere—to brave the worst of communal violence and not run away in fear.

Datta Saheb could read no more. Holding his head in his hands, he was plunged in thought. Had he then been in Lahore with his family, what would he have done? Would he have stayed on and let his family die? Even if he and the other members of the family had chosen to face death, what would have been his duty regarding his sister, Shukla? Would he have let her be taken away by the Muslim rioters? To have his sister be dishonoured by them? For her to be a slave or wife to one of them?

How, Datta Saheb was wondering, could anyone have followed Gandhi's advice in the midst of that insanity and cruelty? How at all, he even asked, could Gandhi expect people to do that?

It happened—this profoundly unsettling experience—more than a decade ago. I dared not speak a word that day. I dared not speak with him about it thereafter. I continue to be haunted by what I saw of my master and heard from him that day. I know that he had not forgotten what Gandhi is about. That the old man's "Die with the dying Lahore" was in keeping with what he had exhorted all along. I also know that even as Datta Saheb said all that, he was untouched by communal rancour. The Hussaini Brahmin in him, the human in him, had no room for narrowness. His very humanity is what was behind his existential vexation. His angst.

Here is a dilemma of which no self-reflexive scholar can ever afford to be unaware.

Datta Saheb has breathed his last. With his last breath came the deliverance he had begun to pray for. Yet his going away hurts. It is not alleviated even by the realisation that the Guru is not gone.

Gendered Migration
Does the Better World Exist?

MEGHNA DUTTA

BOOK REVIEWS

Migration, Gender and Care Economy edited by S Irudaya Rajan and N Neetha, *Oxon and New York: Routledge, 2019; pp ix + 205, ₹995.*

Migration has emerged as a critical influence on the development discourse in most developing countries. In particular, India has become an important source of migrant labour. However, the gender aspect of migration has caught the fancy of researchers quite late. Given the delayed attention to female migration, the book under review fulfils a major gap in the literature. This book documents the experiences of the neglected actors of globalisation—migrant women. However, while describing in detail the structural and cultural contexts within which these women often operate, the book questions the dominant paradigms about women being the passive agents in migration and documents ways in which they take control of their lives in often difficult circumstances. With women's increasing participation in conventional labour migration, several specifically female forms of migration and female-specific economic niches have emerged. These include the commercialised migration of domestic workers, also called "the maid trade," the migration and trafficking of women in the sex industry, the organised migration of women for marriage called the "mail-order brides," and migration for the care industry, the latter also being the focus of the book.

Female Migration

The opening chapter sets the tone of the book. The authors have identified the criticality of female migration and argued how the landscape of female migration has changed over time from migration due to marriage to migration for work, especially in urban areas. The chapter also brings to the fore a relevant, but long neglected aspect, of having a single cause for migration of women in all national surveys of India. Chapter 2 attempts to assert that migration may actually make individuals worse-off by forcing them to live in unhealthy places and environments without basic facilities, such as water and sanitation, while continuing to keep them at the mercy of vulnerable jobs. However, except for four quotes from respondents, the authors do not resort to any form of analytical approach to reach the conclusion. In fact, this chapter also raises a concern with respect to the significance of the title of the book since it has no focus on the care economy per se. Therefore, even though the readers are under the impression that various aspects of migration and gender will be discussed in the context of care work in the book, this particular chapter clearly remains a deviance.

Chapter 3 highlights the importance of state policies and the implications of social norms on gendered and occupationally segmented works. It discusses how the idea of patriarchy has been reconstructed in the wake of feminisation of migration. The dominance of informal activities in the care industry renders women helpless against exploitation, emphasising the fallacy in the state's migration policies and reinforcing gender stereotypes. The paper on nursing labour, employment regimes and affective spaces in Chapter 4 studies the politics of gender, labour and informalisation with respect to migration given the dual migration pattern—international immigration of nurses from India and internal migration of trained nurses seeking employment to gain experience before immigrating. The author extensively discusses how the possibility of spatial, social and economic mobility has obliterated the stigma associated with nursing. Furthermore, even within the structure of a fragmented labour market, how the migrant but trained workers and local but untrained workers are located in the hierarchies is beautifully traced and linked through the strands of caste, class, ethnicity, language, and community which become basis for exclusion. Chapter 5 based on a study conducted in the United Arab Emirates, attempts to understand why women are increasingly endeavouring to migrate and what it spells in terms of newer possibilities with respect to freedom and accessibility. The study documents the multiple negotiations that women migrants make in the international labour market, how their identities are constructed by the interplay of several existing hierarchies and social categories and more importantly how public spaces are utilised by the female migrant workers, helping them to develop informal networks and giving them a sense of anonymity. The study brings to fore the hitherto trivialised aspect of differential experience of repression faced by domestic workers even in public places.

Women Left Behind

Chapter 6 discusses the problems of women left behind (WLB) due to male emigration in search of employment. With data from Kerala, the authors give a detailed analysis of WLB by their religious affiliation, age, educational attainment and explores the impact of such migration and the remittances received therefrom on the social, economic and emotional well-being of the WLBs. The changing gender roles through three broad dimensions of resources, agency and achievements of the left behind women have been highlighted. One interesting result obtained from this study is the preference for a non-transnational migrant son-in-law by the WLBs, indicating that even though increased autonomy and better living standards are appreciated by them, the emotional distraught that migration of the husband causes

often outweighs the economic and social gains. Even though this chapter is a significant addition to the literature on impact of male outmigration on the left behind women, the authors could have further expanded the scope of the study to understand other related issues such as health, cases of sexual harassment by close relatives and so on for the WLBs.

Chapter 7 continues the study on WLBs with evidence from Punjab. This chapter portrays the trouble of the WLB in families in a strong patriarchal society with patrilineal norms, where the left behind wife seldom gets the autonomy and economic independence that was observed in the previous chapter in Kerala. In most cases, given the social structure of joint family, it is the left behind male member of the family who controls the remittances and decides how they are to be utilised, and the patriarchal gender roles are reinforced. Consequently, of late it has resulted in breaking up of the joint family system and the WLB prefers to stay alone with her children, increasing her workload manifold in the process. Chapter 8 locates the same study on WLBs on the Dogra community of Jammu. The paper highlights the same issues faced by WLBs as in the previous two chapters on Kerala and Punjab. The experiences recorded with respect to the WLBs were not any different; however, the additional contribution that the paper could have made, but fails to pursue is the impact of the father's absence on the child's overall development. This could have been a new addition to the existing knowledge on male outmigration but is neither developed with a strong hypothesis nor studied in-depth.

Chapter 9 highlights the pain and feeling of being rootless by the women who had migrated out with their husbands. Based on an ethnographic survey in Canada, the author explores the trials and tribulations Indian Hindu women face in having to balance the two opposing worlds of their native culture, which helps them maintain their identity in the foreign land, and the modern values of the "other" land. However, as the author herself points out

> given the qualitative nature of the study and the fact that the number of respondents was very small, it would be difficult to draw any concrete conclusion. (p 156)

Chapter 10 deliberates on how transgression of borders by women for unskilled labour is often associated with the notion of loose morals even though women consist of a significant section of migrants. The study, based on the lived experiences of Bangladeshi migrant women to India, depicts how transgressing national borders illegally gets associated with the codes of honour imposed on them by the society. For survival, these women had to negotiate geographical as well as moral spaces, and live in constant fear of loss of identity and social position. Chapter 11 addresses an issue that is discussed often, but documented less. With increasing outmigration by the younger population, the left behind lonely elderly population is a matter of concern and so is their health. With women also migrating as primary migrants and working spouses, the role of caregiver in the family became vacant requiring a rearrangement of extra familial care service for the elderly staying behind. In the care hierarchy, care responsibility and care provisioning are biasedly distributed based on gender, caste and class with lower-caste women being increasingly hired for elderly care provisioning in houses of upper caste and upper-class transnational migrants. The chapter starts off well, but does not present much illustration from the field survey, therefore resorting to generalisation and assigning little discussion to the main question asked.

Migration Policies

The final Chapter 12 discusses the much-debated issue of migration policies, the purpose they serve and the problems they create. The chapter explains how the migration policies of the state, which are often restrictive for the women, are often exploitative, paternalistic and encourage the development of an informal, even more exploitative migration channel. Neither do the policies offer effective protection to the migrants nor do they adequately address the social factors that frame these movements. Drawing on observations from India and Saudi Arabia, the authors prescribe the involvement of non-state actors too in the development of migration policies for the development of improved outcomes.

The book addresses a whole range of topics on migration with a focus on the gender aspect of such movement, however, the major issue remains a lack of flow in the book. It would have been an easier and encouraging read, had the book been divided into sections with papers addressing similar issues clubbed together. Finally, the biggest incongruity is in the title of the book which identifies the care economy as the sector within which the issues of migration and gender are expected to have been studied, however the subject of quite a few chapters remains outside the realm of the "care economy." Nonetheless, the book offers a thoughtful examination of migration from the lens of gender and the resulting shifts in gender roles and family relations proving to be an interesting addition to the extant literature.

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A 'Cosmologial' Approach to Diplomacy

SAMITA SEN

The Making of Indian Diplomacy: A Critique of Eurocentrism by Deep K Datta-Ray *(first published C Hurst & Co), New Delhi: Oxford University Press, 2015; pp xv + 380, ₹795 (hardcover).*

This book opens with an account of the 123 Agreement in 2007, a signal achievement of the Manmohan Singh government, which fractured the United Progressive Alliance (UPA) at home and outfaced international opposition led by China. The treaty invoked a range of contradictory responses, even puzzlement, nationally and internationally, and this, argues Deep K Datta-Ray, is characteristic of India's polysemic diplomacy. It appears opaque and incomprehensible, even to Indians. How do we begin to understand the distinctive characteristics of this diplomacy? Rather than the usual study of texts and documents, Datta-Ray suggests, we have to understand the people and the culture that "make" this diplomacy. As a research strategy, therefore, he sought to embed himself in the Ministry of External Affairs (MEA) of the Government of India. Indian researchers will know that this is the stuff of dreams. Dogged perseverance and, finally, intercession from the then Prime Minister, Manmohan Singh, enabled the dream to come true.

The author spent 14 months in the MEA, able to participate in some of its activities and interview officers at many levels. In common with most dreams, however, the researcher also suffered an awakening. The secret of Indian diplomacy cannot be narrated through a "thick description" of the MEA's people and their functioning. Datta-Ray's conclusion is as inescapable as it is credible—the MEA is largely responsible for implementation of policy. The "making" of the policy is by a small and tight group of individuals around the Prime Minister's Office. This is a historic legacy from the first Prime Minister, Jawaharlal Nehru, who devised a novel approach to India's dealings with the international community, based on Gandhian principles. The book we got then was not an ethnographic account of our diplomatic present but an intellectual history of "Indian" diplomacy, which charts its civilisational continuity from our ancient past. The author considers the modes and methods of the Indian government's dealing with other nations and the world order to reflect a philosophic approach to the world as a community.

He begins with the striking proposition that Indian diplomacy does not follow the dictates of modernity, which, fashioned by the West, has governed international relations in the 19th and 20th centuries and continues to do so in the 21st century. His central argument is that under the influence of modernity, the Western approach focuses only on time as a category, and is, therefore, anarchic and binary. Starting from the colonial period and into our time, the binary of the "other" has sedimented into "race." In the 1970s, the "realist" school of international relations theory posited an assumption of anarchy for the existence of an international society. In such theories, diplomacy is competitive. Indian diplomacy, however, rejects this approach in favour of a "cosmological" approach encapsulated in the civilisational wisdom, *vasudhaiva kutumbakam* (the world is one family), which assumes a more symbiotic international community. The Indian approach integrates time and space and allows for "contextual truth" within an overarching system of truth, what is termed the dharma complex.

Negotiate without Harming

The author traces the continuity of this philosophical strain from the *Mahabharata* to M K Gandhi and thence to the foundations of our diplomatic policy and practices. He identifies four moments in this continuity in Chapters 3 to 6 of the book.

In the *Mahabharata*, the author argues, "is the practice of diplomacy that Europe claims to have invented" (p 135). Its chief feature is a "unified cosmos that must be negotiated without harming" (p 135). The chapter focuses on the role of Krishna at the eve of the war of Kurukshetra. Krishna performs the role of ambassador for a peace he knows is impossible, indeed, he cannot wish for, since he is the agent that must ensure the war takes place in order to defeat evil. These layers are possible without violating "truth" because of a recognition of the contextual nature of truth contained within the cosmos.

The next chapter examines Islam's encounter with the dharma complex in the subcontinent. Mughuls, especially emperor Akbar, absorbed some of the elements of the dharma complex producing what the author names an "Indo–Mughal" culture, which struck an uneasy balance between a cosmological and a modernist approach. The British encountered this hybrid style of diplomacy, when they sought the firman to trade in India and concessions for their settlement in Calcutta. Their deputation travelled from Calcutta to Delhi in 1714 to the court of emperor Farrukhsiyar. The travails of John Surman, the ambassador responsible for these negotiations, his orientalising approach, his incomprehension of the workings of the Mughul court, show the radical incongruence of intercultural transactions in the period. In the end, Surman's ability for pragmatic adaptation, which he effected without transcending his prejudices, enabled his success and this laid the colonial template. In the decades to follow, the East India Company practised diplomacy backed primarily by an army, with an ever-present threat of violence and conquest.

The colonial state achieved a greater rupture than the Mughals by its uncompromising "modernity." This interregnum was pregnant with many possibilities. On the one hand, British colonial rule contributed towards the emergence of an elite that was strongly influenced by modern Western ideologies. Dutta-Ray does indicate in an aside (and with some

entertaining anecdotes) that the modernising influences were not absolute and that there were strains of continuity in ideas and intellectual processes even among the apparently deracinated English-educated upper class in colonial India. Members of this elite entered the colonial bureaucracy but with major limitations, such as not having access to the political and diplomatic corps. In the "steel-frame" inherited by independent India, specific experience of diplomatic practice was somewhat lacking. On the other hand, this was the period when "politics" was redefined by Indian nationalists. And, clearly, this was not wholly a "derivative discourse." The foremost nationalist, Gandhi, drew on a longer civilisational wisdom (and the *Mahabharata*) for a template for politics, which enabled "idealising the real and realising the ideal" (p 135). He recovered the notion of dharma and created a new "art of politics." Gandhi's experiments with truth, his discursive play with ethics and politics, and the fashioning of satyagraha as a novel instrument of resistance and realisation were to have an enduring impact on politics and diplomacy after independence.

Nehru's Role

The architect of this Gandhian-style of diplomacy was Nehru. Datta-Ray argues that Nehru took a major step in extending the Gandhian approach to the "international." He succeeded only in part. On one side of the scale are his major successes—the Non-aligned Movement, for instance. It is easy to forget the immense obstacles against which a newly independent country, ridden by internal crisis, could provide leadership for non-alignment at the height of the cold war. The Panchasheel policy towards China echoed this principled stand on international relations. Nehru did not cross the "laxman rekha in terms of weaponisation" (p 239); he diverted resources from the army; he did not want nuclear weapons, only nuclear energy for peaceful purposes. On the other side of the scale are, however, his few but significant wars. Datta-Ray struggles a bit to explain these. According to him, Nehru accepted non-violence as a frame for his international relations, attempted to maintain friendship even with "enemies" but in the end, had to deploy the army against aggressors. This is, he argues, in line with Gandhi's proposition that there has to be principled resistance, even to the point of violence, to aggressive violence. For instance, Gandhi supported the military response to Pakistan in Kashmir. This was not a deviation from the principle of non-violence. According to Datta-Ray, the Kashmir issue was a major turning point, since it demonstrated that "it was possible for the state to perform Gandhian policy" (p 223). This is a difficult argument to sustain, or justify, in the face of the cauldron of violence that Kashmir has become since that moment of "principled resistance."

Dutta-Ray's argument about this "Indian" culture permeating MEA is underlined through a host of illustrations. Two are particularly striking. He narrates the fast-track appointment of Shiv Shankar Menon to the job of foreign secretary, in violation of the usual rules of seniority. This was because Menon, more than other contenders for the job at that time, drew his diplomatic repertoire explicitly from *Mahabharata, Ramayana*, and Gandhi. His success in the MEA can be attributed to his greater fit with the aims and purposes of the political establishment than other bureaucrats trained in conventional language of diplomacy. The author quotes then External Affairs Minister Natwar Singh responding to then United States Secretary of State Condoleeza Rice: "We are not in the game of becoming a great power. Our job is to eradicate poverty" (p 82). Such were the ways in which Indian diplomats confounded Western expectations. Dutta-Ray argues that these responses represent

differing world views, not attempts at deliberate obfuscation.

This is not an easy book to read because it breaks from convention in style and content. I was struck by the argument made in Chapter 2 about government, papers and files. The author does not rely on textual sources: "not only because paper is quite often meaningless in the MEA, but because the reliance on records is in itself a reproduction of an imperialist mind-set" (p 106). The author goes on to narrate the response of a diplomat to the outrage of a historian: "Build buildings for pieces of paper?" (p 106). Such a summary dismissal of the very idea of archives is somewhat difficult for a historian to accept. Indeed, the notion of archives is in reinvention as of now, a debate not discussed further in this book. It is to be noted, however, that Dutta-Ray, in shifting the ground away from documentation, is not moving towards conventional "fieldwork." The book is not, as one might expect from the blurb and the opening pages of the introduction and from the striking "fact" of his being embedded in the MEA, an account of how the MEA functions. Nor is it a history of the making of Indian diplomacy, which would have been a major challenge in its own right. It is an intellectual history of some of the underlying assumptions and principles of diplomatic practice. It is, therefore, written in engagement with modernist and postmodernist philosophy, littered with logical twists and turns often extremely difficult to follow.

The book can only be read with time in hand and an open mind. It seeks to negotiate between two extremes, each of which could be a trap. On the one hand, there is the danger of essentialising the West in its challenge to Eurocentrism; on the other, there is serious risk of an unqualified celebration of India's ancient civilisational wisdom. This latter trap grows more politically sensitive by the minute at the current conjuncture in India's politics. For instance, the invocation of *Ramrajya* by Gandhi has been and continues to be controversial. The author considers this to be one of his greatest contributions, since he thereby exceeds modernity's "history." However, Dutta-Ray does not explore the genealogy of *Ramrajya* in *Ramayana*. That may well be a project for the future and a more difficult one.

The book opens up two possibilities not explored in it. Is the "modern" equal to the Western? If time is so central to the "modern," do we have a premodern Western? If so, what possibilities open up with the civilisational continuities of the "Western" taken into account? The second follows from the first. Are there multiple possibilities of civilisational "others" in the exception to the diplomatic norm of the West? That is to say, is India alone distinctive in this regard? Are there other non-European civilisational and cultural alternatives to the anarchic binary style of diplomacy against the backdrop of which this "making" has been traced?

This book is a valuable addition to the new current of intellectual history animating South Asian studies at the current moment. It is a significant text for historians as well as political scientists and will of course be compulsory reading for international relations experts. This reviewer, however, will remain in expectation of a second book that tells the story of the 14 months in the MEA and the author's encounters with the women and men who people our diplomacy.

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Chandra, Rakesh (2018); *Globalization, Environmental Protection and Social Justice: A Study in Indian Legal Framework*, Delhi: Disha International Publishing House; pp 449, ₹1,100.

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Chatterjee, Partha (ed) (2020); *After the Revolution: Essays in Memory of Anjan Ghosh*, Hyderabad: Orient BlackSwan; pp xxxiv + 315, price not indicated.

Das, Veena (2020); *Textures of the Ordinary: Doing Anthropology After Wittgenstein*, Hyderabad: Orient BlackSwan; pp xii + 410, $125/₹1,350.

Jahanbegloo, Ramin (2020); *The Courage to Exist: A Philosophy of Life and Death in the Age of Coronavirus*, Hyderabad: Orient BlackSwan; pp 96, price not indicated.

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Sharan, Awadhendra (2020); *Dust and Smoke: Air Pollution and Colonial Urbanism, India, c.1860–c.1940*, Hyderabad: Orient BlackSwan; pp xxiv + 319, price not indicated.

Thapar, Romila (2020); *Voices of Dissent: An Essay*, London, New York and Calcutta: Seagull Books; pp viii + 163, $19/£12.99/₹499.

Biodiversity-focused Development

Ways to Sustain Human Well-being

NANDAN NAWN, SUDHA VASAN, KAMAL BAWA

"Sustainable development" and "sustainability" may be among the most used phrases across discourses, both mainstream and radical, on "development." As in any conceptualisation, disciplinary frameworks and value judgments matter here as well. The goal of sustainable development is to meet the needs of the present generation, but in a way that it does not compromise the ability of future generations to use the same resources (World Commission on Environment and Development 1987). Indeed, the resources in question are natural resources, primarily ecological systems.

There is a reasonable consensus on the three pillars of sustainable development—ecological, economic, and social—and the trade-offs among them across the disciplinary boundaries (Figure 1.1 in Munasinghe [1993]) are one of the earliest expositions. The connections between the economic, social and ecological systems are seen as three concentric circles (Figure 1, p 28) to convey dependence of the economic on the social and ecological, and of the social on the ecological. It follows that the sustainability of the economic system, which influences nature, and the type and speed of "development" are dependent on the sustainability of the ecological system, with the social systems (such as institutions and processes defining rights and responsibilities) "mediating" the bidirectional flows between ecological and economic systems (Figure 2.1 in UN [2014] is one of the latest examples).

The concept of sustainable development received an impetus in the early 1970s with the publication of *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (Meadows et al 1972). However, it was not until the early 1990s that connections and interlinkages between "environment" and "development" started appearing in the international policy space. A landmark event in the history of sustainability was the 1992 United Nations (UN) Conference on Environment and Development at Rio de Janeiro, the Earth Summit, which sought the commitment of nation states to the principle of sustainable development. Ten years later, by the time another UN-sponsored "World Summit on Sustainable Development" took place in 2002, sustainability science was already established as an academic discipline (Clark and Dickson 2003).

Concurrently, the Millennium Ecosystem Assessment (MA 2003), a non-governmental initiative involving researchers across the natural and social sciences, identified the contributions of natural ecosystems to human well-being. By 2007, a group of ecologists established an international initiative, the Economics of Ecosystems and Biodiversity (TEEB), to explore the benefits nature provides to humanity. In 2012, an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services was established to advance the interdisciplinary knowledge and policy framework for positive outcomes in interactions between nature and society. The Dasgupta Review on the Economics of Biodiversity (HM Treasury 2020) is the latest initiative to integrate economic development and human well-being.

Within India, the Office of Principal Scientific Advisor, Government of India, approved nine national missions in science and technology (PIB 2019). One of these missions was the National Mission on Biodiversity and Human Well-being (Bawa et al 2020). The main goal of the mission is to accord primacy to nature in development.

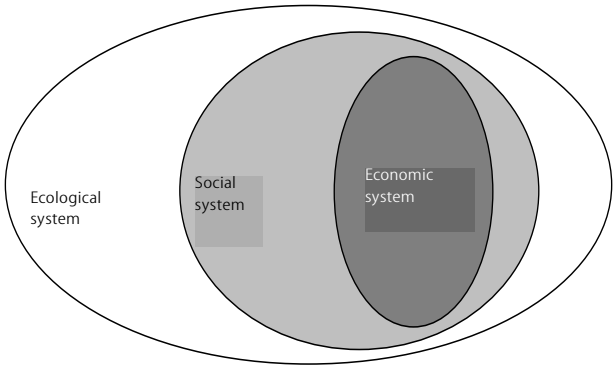
In short, there is an increasing recognition of biodiversity and ecosystem services within the development discourse. Imagining biodiversity-focused development pathways to sustain and augment human well-being should be the next step, followed by credible action plans and their effective operationalisation. Some of such aspects are captured in this issue of the Review of Environment and Development. It is composed of five papers by academics engaged with the National Mission on Biodiversity and Human Well-being in various capacities. The papers address a range of issues, but by no means all, that will be the subject of the mission.

Overview of the Papers

Dhruv Gangadharan and Ravi Chellam (p 29) make a case for moving away from "exclusionary" models of conservation and economic development to the ones that are socially just and inclusive with participation of local communities. They propose the adoption of the 4-Cs (connections, conditions, capabilities and cross-cutting constituent) framework of Breslow et al (2016) with illustrations from the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The paper advocates wide-ranging consultations and engagements among citizens, statutory bodies representing them at different levels, and the executive arms of governments at the centre, states and union territories. This certainly involves some non-trivial transaction costs and political will.

EPW is grateful to Nandan Nawn, Sudha Vasan and Kamal Bawa, guest editors of this issue of the Review of Environment and Development.

Figure 1: Ecological, Social and Economic Systems



In the same vein, G Ravikanth, Vikram Aditya and R Uma Shaanker (p 34) make a case for moving away from intensive agriculture to biodiversity-based agriculture to sustain agriculture, ensure nutrition and make agriculture less vulnerable to climate change. They suggest foregrounding the biodiversity in and around farms (BIAF) as a means to enhance agricultural productivity, restore soils, and enhance rural livelihoods along multiple spatio-temporal coordinates. For BIAF located in a "fuzzy domain" that is neither under the purview of the Ministry of Environment, Forest and Climate Change, nor the Ministry of Agriculture and Farmers' Welfare, the first step to mainstream BIAF in the policy space will be to ensure its "ownership" by one of the line ministries.

Noting the rise of zoonotic diseases (that animals transmit to humans) such as COVID-19 as a direct consequence of biodiversity loss caused by large-scale incursions into natural ecosystems, Mridula Mary Paul, Niti B Jadeja, Nadisha Sidhu and Abi T Vanak (p 40) examine the associated institutional framework pertaining to public and animal health in India within the One Health framework advocated by the World Health Organization, the Food and Agricultural Organization of the UN, and the World Organization for Animal Health to tackle zoonotic diseases. Pointing out the need for coordination for the surveillance, research, and data sharing and within and across multiple institutions, they identify intersectoral collaboration—a necessity for operationalising One Health approach—as the most serious barrier. Given the economic and social losses caused by the recent pandemic, one can hope that the "big push" for collaboration would occur sooner than later.

Motivated by the "reverse-migration" caused by the lockdown following the COVID-19 pandemic, Rajkamal Goswami, Shreya Bedia and Nitin Pandit (p 48) argue in favour of making investments towards ecological restoration in the rural areas, which can serve as a source of sustained livelihood opportunities and other co-benefits such as meeting the targets pledged by India in international fora on restoration of degraded land. They project an investment of ₹38,300 crore to meet this target, and find this amount to be a little less than the additional funds recently allocated under the Mahatma Gandhi National Rural Employment Guarantee Act, by the Government of India. With the UN declaring the next decade for "ecological restoration," concrete actions by the governments in the states and the centre can certainly put India among the countries who are serious in meeting the "Paris Agreement" pledges.

Documenting, monitoring, and sustainably using biodiversity have been matters of intense debate in India. The notification of Biological Diversity Act, 2002 called for the formation of Biodiversity Management Committees (BMCs) in every panchayat and preparation of the People's Biodiversity Register (PBR) by BMCs. Noting the challenges associated with the present manual PBR processes—from data collection to reporting—and the consequential usability difficulties, Vishwas Chavan and Vinod Mathur (p 55) advocate a "National Framework for Electronic PBR" with multilingual access and use options. Needless to say, such "ease of use" will have to accompany effective mechanisms to address multiple challenges of open access of data while protecting ownership of communities over their knowledge, overlap of knowledge as well as ownership of biological resources that do not recognise cultural, political, and geographical boundaries, and overextraction of these resources.

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Exploring the 4-Cs Framework

Integrating Biodiversity Conservation and Human Well-being in India

DHRUV GANGADHARAN, RAVI CHELLAM

In India, mainstream environmentalism and development situate biodiversity conservation and human well-being as mutually exclusive goals. This is contentious because a large section of India's population has inextricable economic, social, political, and cultural linkages with its rich biodiversity. The 4-Cs framework is suggested to address human well-being within the purview of ecosystem assessment and management by incorporating multiple social-ecological variables. Examples of domains, attributes, and indicators of human well-being are examined in the context of the Forest Rights Act (2006). Further, the framework can be tailor-made to guide conservation practitioners, establish the discourse on human well-being in the field of biodiversity science, and broaden the normative understanding of human well-being as an essential outcome of biodiversity conservation.

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India is a mega diverse country with four biodiversity hotspots and 10 biogeographic zones hosting tens of thousands of faunal and floral species distributed over varied forest, wetland, shrubland, grassland, desert, coastal, and marine ecosystems. India also has a growing human population of 1.3 billion people that is as dense as 382 persons per sq km (CBD nd). Nearly 200 million people are directly dependent on forests as a primary livelihood source while around 100 million people live on land classified as forest (FAO nd). Forest dependence includes livelihoods based in part or completely on the extraction of timber, fuelwood, fodder, and non-timber forest products (NTFPs; medicinal plants and wild foods) and livestock grazing (FAO nd). The Millennium Ecosystem Assessment (2005) categorises such services provided by forests as provisioning ecosystem services that sustain local communities.

The Millennium Ecosystem Assessment (2005) also describes regulating (for example, climate, flood, and disease regulation), supporting (for example, photosynthesis and soil formation), and cultural services (for example, aesthetic and spiritual) provided by ecosystems, and further establishes clear linkages between ecosystem services and human well-being. This is especially relevant to India, because the assessment characterises: (i) the intensity of these linkages, signifying the degree to which an ecosystem service can have an impact on an element of human well-being, and (ii) the possibility of socio-economic factors to substitute or replace some services that have been degraded. For example, provisioning ecosystem services such as NTFPs are strongly linked to livelihoods and sustenance of forest-dependent communities, and can be replaced by alternative livelihoods based on social and economic mobility of communities. But regulating ecosystem services such as climate regulation that are strongly linked to overall health of communities cannot be easily replaced by another service irrespective of socio-economic circumstances. Further research (Naeem et al 2016) goes beyond the replaceability of ecosystem services and shows that proportionate and long-term access to all ecosystem services can be facilitated by policies that correlate sustainable management of landscapes, stabilisation of ecosystem processes, and biodiversity richness with enhancement of human well-being.

Building on the approach of ecosystem-based management, we introduce the 4-Cs framework of Breslow et al (2016), which is relevant to India and has the potential to integrate key

constituents of human well-being with biodiversity conservation. The following sections describe how the framework can be used in strengthening the implementation of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, known as the FRA.

Exclusionary Conservation, Elusive Well-being

Multiple conservation models unanimously recognise the intrinsic value of biodiversity and the premise of managing biodiversity for human well-being. However, they differ quite a bit based on the degree of human inclusion or exclusion from protected areas, and the means and methods of excluding local communities as part of the approach to biodiversity conservation. The framing of conservation has also changed from the paradigm of wilderness-based "nature for itself" to resilience- and adaptivity-based "people and nature" (Mace 2014). The exploitation of biodiversity is not homogeneous and ranges based on scale; it has the underpinnings of a "class" dialectic. Large-scale habitat destruction, land use change, and extinctions have been attributed to capitalist appropriation of biodiversity (Dawson 2016) with effects like the climate crisis on a planetary scale symbolising the Anthropocene (Bonneuil and Fressoz 2017). The exploitation of biodiversity by local communities, within as well as outside protected areas, has also been a contentious issue due to pressures, such as unregulated livestock grazing, local hunting practices, shifting cultivation and increased NTFP collection, which destabilise ecosystems (Madhusudan and Raman 2006). Conservation models built on the premise of a top-down governance structure address the latter by establishing inviolate areas and argue for a "hands-off nature" approach to restore ecosystem processes and the strict management of natural resources. This approach is seemingly convenient for conservationists in a country like India where human population pressures on nature are widespread, and separating people from nature could potentially allow the restoration of biodiversity.

Notwithstanding that such pristine natures are socially constructed and are a reflection of the environmentalism of the conservation elite (Vasan 2005), studies have also recognised the inequalities perpetuated by such a "fortress" approach (Brockington 2002, 2004) of separating local people and their nature(s). The relocation of forest-dwelling communities for conservation in India is seen as a "win-win" (Bindra 2020) situation to promote conservation and generate alternative livelihoods for human welfare (Karanth 2007). Relocations have also been characterised by abject impoverishment, marginalisation and political instability (Costanza Torri 2011; Kabra 2009). Such actions capitalise on communities' vulnerabilities and not their capabilities. In fact, relocations (Kukreti 2020a, 2020b) have ironically coincided with increased environmental clearances for "development projects" (Menon and Kohli 2020). These projects have irreversible anthropogenic impacts on biodiversity with further degradation of ecosystem services to the point of no return, which will ultimately have an impact on well-being, especially of local communities.

Such contradictions in policies and practices call into question what we are conserving in India and, more importantly, for whom. Conventional models of conservation and economic development have enabled significant improvement in human well-being, albeit in a manner that is not sustainable, and with trade-offs and accumulation of disbenefits for multiple actors. In order to make sustainability and equitable access to natural resources work, there is a need to enquire into:

(i) The spatial and temporal scales for biodiversity conservation, which the Millennium Ecosystem Assessment (2005: 1) echoes by stating that

> [t]he changes that have been made to ecosystems have contributed to substantial net gains in human well-being and economic development, but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services, increased risks of nonlinear changes, and the exacerbation of poverty for some groups of people.

(ii) The need for robust institutions that enable biodiversity conservation at multiple scales, that is,

> [c]hanges in institutional and environmental governance frameworks are sometimes required to create the enabling conditions for effective management of ecosystems, while in other cases existing institutions could meet these needs but face significant barriers. (Millennium Ecosystem Assessment 2005: 93)

Inclusive Conservation, Community Well-being

Conservation models built on bottom-up governance mechanisms have the potential to address these concerns by critiquing the nature–culture binary, and recognising the dynamism of ecosystem processes and management of social-ecological systems by local communities. This approach lays emphasis on local initiatives and resilience of community institutions through which resource users achieve sustainability for their well-being (Ostrom 2009). It is imperative that wildlife conservation, and by extension biodiversity conservation, based on different framings and the multiplicity of values, is essentially a social project. Support and participation of local people is essential not only for the long-term success and sustainability of conservation, but also for inclusiveness, equity, and justice. Participatory strategies in community conservation are preferred as alternatives to exclusionary conservation due to the latter's impacts on local people's well-being (Brockington 2004; Lele 2010). The inclusion of human well-being in the conservation discourse (Kareiva and Marvier 2007; Biedenweg and Gross-Camp 2018) is a reflection of this tendency towards a more socially just conservation model.

There is also widening literature on human well-being in social-ecological systems (Milner-Gulland 2012), its relationship with the environment (Agarwala et al 2014), its use in sustainability studies (Hicks et al 2016), and in natural resource management (Charnley et al 2017). As a result, ecosystem assessments and management increasingly consider human well-being as an essential element and outcome of biodiversity conservation. After all, especially in the global South, human well-being is a particularly complex issue as it can differ based on power relations like class, caste, gender, race, and geography.

We introduce and advocate the use of the comprehensive 4-Cs framework of Breslow et al (2016) in India as it has the

scope for both contextualisation and operationalisation of human well-being as an integral part of conservation. Human well-being is defined as "a state of being with others and the environment, which arises when human needs are met, when individuals and communities can act meaningfully to pursue their goals, and when individuals and communities enjoy a satisfactory quality of life" (Breslow et al 2016: 250). In the following sections we discuss this framework in the context of India's FRA, 2006, a legislation of the Ministry of Tribal Affairs (MoTA 2006).

The FRA provides the legal framework and processes for recognising and conferring both individual and community forest rights (among other rights), to forest-dwelling Scheduled Tribes (STs) and other traditional forest dwellers who have been residing in such forests for generations. It historicises power inequalities in forest governance which resulted in local communities' rights not being recorded for several decades even after independence, which has had ramifications on the well-being of these communities (Bawa et al 2011). Though the FRA is a rights-based legislation, it also has a number of provisions for conservation and has had positive conservation outcomes (Broome et al 2017). These include the granting of community forest rights (CFR) for sustainable use and conservation of biodiversity, and the establishment of Critical Wildlife Habitats (CWH) within protected areas for nurturing the ecological balance which in turn improves and strengthens the conservation regime of the forests.

However, the ceaseless opposition to the FRA by the forest bureaucracy has affected its implementation especially while recording and granting of various rights (Sahu 2017). They have gone to great lengths to thwart its implementation by amending the Wildlife (Protection) Act in an attempt to undermine various provisions of the FRA (Desor 2015) and filing petitions in court (Campaign for Survival and Dignity nd). Foresters see the FRA as a threat to the dominant top-down model of conservation and try their best to exclude local populations from protected areas. This has resulted in an extremely low number of CFR titles being granted (MoTA 2020) thereby affecting tenurial and access rights of local communities and undermining their agency in biodiversity conservation.

Another indication of this attitude and approach has been the confusion and complete lack of progress with respect to the establishment of CWHs. The CWH provision of the FRA is currently the strongest conservation provision in the Indian Constitution despite which not a single CWH has been established so far (Chellam 2019). In the FRA, the responsibility for establishing CWHs has been given to the Ministry of Environment, Forest and Climate Change (MoEFCC). It is probable that institutional inertia and bureaucratic resistance to the FRA has resulted in this state of affairs.

The 4-Cs in the Context of Ecosystems

Human well-being is a multidimensional concept that goes beyond the conventional economic framing of material well-being and physiological framing of physical well-being. It includes mental well-being, good social relations, a sense of community, and the relationship(s) that individuals and communities share with the environment. In the context of ecosystems, Breslow et al (2016) developed a framework that considers four broad constituents of human well-being, namely connections, conditions, capabilities, and a cross-cutting constituent with domains spanning the other three constituents and factoring various dimensions that "operate at multiple social scales within a social-ecological context" (Breslow et al 2016: 251). Each constituent of the 4-Cs framework is composed of four domains; each domain has specific attributes that are evaluated by indicators. This comprehensive framework is interdisciplinary in its conception, representative of social-ecological systems, and is robust, right from the wider layers of constituents to the finer layers of attributes and indicators. These are defined and developed based on the context, that is, the specific ecosystem and its human communities that are being assessed.

The four constituents are derived from the broader definition of human well-being by Breslow et al (2016):

(i) Connections refer to the aspect of "being with others and the environment," and include the domains of tangible connections with nature, intangible connections with nature, social relationships, culture, and identity.

(ii) Conditions refer to the setting in which "human needs are met," and include the domains of health, safety, economy, and environment.

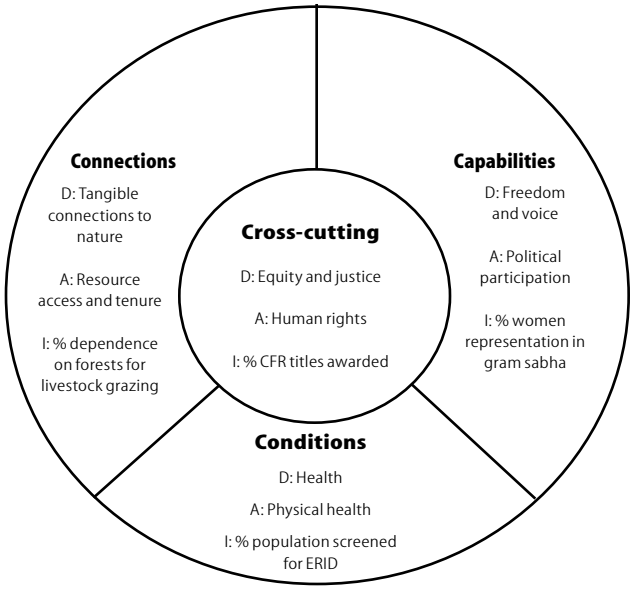
(iii) Capabilities refer to the collective means with which humans "act meaningfully to pursue their goals," and include domains of livelihood and activities, knowledge and technology, freedom and voice, and governance and management.

(iv) The cross-cutting constituent is central to and spans across the other three constituents and refers to domains of equity and justice, security, resilience, and sustainability required to "enjoy a satisfactory quality of life."

Attributes of various domains mentioned in the framework function as subsets of the domains. The framework is designed to enable the definition of attributes and development of indicators to be tailored according to the ecosystem and the prevailing socio-economic context that are being assessed, and not function as a one-size-fits-all framework. This is better understood by taking the example of a domain like "tangible connections to nature," which has attributes of "resource access and tenure," "access to nature," and "stewardship."

While resource access and tenure can be defined according to accessibility of natural resources to communities, the indicators of this access can differ based on context, for example, quantity of NTFPs harvested, physical distance to markets, percentage of dependence on forests for livestock grazing, and quantity of freshwater fishery harvest based on season (Figure 1, p 32). Similarly, access to nature can be defined according to public access to natural resources and the outcomes of such access, but the indicators may differ based on demography (for example, barriers for marginalised caste groups to access freshwater in rivers or lakes), which also determines uses that are based on both need (for example, extent of forest use for subsistence) and desire (for example, potential for forest use in recreation and tourism). Stewardship can also be

Figure 1: Schematic Diagram of the 4-Cs Framework



D: Domain
A: Attribute
I: Indicator

CFR: Community forest rights
ERID: Emerging and re-emerging infection diseases

An example of a domain, its attribute, and an indicator have been provided for each constituent of human well-being with respect to implementation of the FRA.
Source: Adapted by authors from Breslow et al (2016).

defined according to community initiatives in protecting natural habitats and sustainable management of common-pool resources. Indicators can vary based on the social-ecological contexts; land area demarcated for protection in community-conserved forests can be used as an indicator in forest ecosystems, quantification of restoration in degraded landscapes, or management and utilisation of invasive species (for example, *Lantana camara*) can be used to indicate stewardship in others.

Well-being and Empowerment through FRA

By construction, the 4-Cs framework, and its indicator-based approach, extensively considers and represents a whole suite of social-ecological systems for integrated ecosystem assessments and ecosystem-based management. Breslow et al (2016) identify 2,300 such indicators for a single ecosystem, that is, the California Current marine ecosystem. In a subsequent paper, Breslow et al (2017) outline a process of evaluating the indicators for human well-being to make them socially robust. Although the authors agree that this prototype "needs further testing and developing and will need considerable modification to suit diverse contexts" (Breslow et al 2017: 17), it has the potential to be used universally because of the inherently adaptable scope of attribute definition and indicator selection. There is a strong case for using the 4-Cs in the Indian context for assessing the well-being of forest-dwelling STs and other traditional forest dwellers.

A well-being domain like "culture and identity" is attributed to an overall sense of being and connection with place, cultural practices, traditional ecological knowledge, linguistic identities, and other ethnographic signifiers moulded by the entanglement of human and environmental histories that render the idea of community. Connections represent the dynamism and complexities of nature–culture relationships that are locally specific. Along with the aforementioned tangible connections of tenurial access, cultural identities conceptualised in the framework are recognised under Section 3(1) for "individual or community tenure or both" of the FRA, under which Section 3(1)(k) allows the "right of access to biodiversity and community right to intellectual property and traditional knowledge related to biodiversity and cultural diversity."

Apart from a holistic connection with nature, human well-being is also characterised by socio-economic and environmental conditions that influence community and individual health, a domain attributed to food availability, and physical and mental health. Forest-dependent communities are particularly vulnerable groups living in remote locations and in close contact with wildlife, increasing the risks of direct human–wildlife conflict and emerging and re-emerging infectious diseases, for example, the Kyasanur Forest Disease in the Western Ghats. Food security and healthcare infrastructure conceptualised in the framework are also recognised under Section 3(2) of the FRA for government-managed facilities such as "(b) dispensary or hospital, (c) *anganwadis*, (d) fair price shops … [and] (g) drinking water supply and water pipelines."

An important dimension of human well-being is the constituent of capabilities, which builds on communities' means to achieve a good life, not through performative processes of capitalist subsumption, but by enabling social justice, indigenous rights and sovereignty, political participation, decision-making, and information and knowledge capacities in order to facilitate free, prior, and informed consent. The Capabilities Approach (Sen 2000; Nussbaum 2011) critically takes the discourse in human well-being and development beyond growth and consumption, and has even been recently articulated as "*sustainable* development as freedom" (emphasis added) for forest-dwelling communities (Krishnan and Mohanty 2020). The domain of freedom of voice which is nested within capabilities in the framework is legally recognised by Section 6(1) of the FRA, which devolves authority to the local-level gram sabhas "to initiate the process for determining the nature and extent of individual or community forest rights or both."

The cross-cutting domains of "equity and justice," "security," "resilience," and "sustainability" are central to and democratise the concept of human well-being. These are transdisciplinary domains that represent social welfare and biodiversity conservation as intersectional concepts across social-ecological variables and environmentalities (Agarwal 2005). Attributes of cross-cutting domains are indicative of long-term preparedness of communities such as adaptation to climate change, capacity to challenge violations of human rights in the guise of "fortress conservation," robustness of local institutions like gram sabhas to resist "accumulation by dispossession" in capitalist development models, rates of habitat loss and biodiversity extinction, and evidence of restoring ecological functions. These cross-cutting domains are also recognised by the FRA, which has the mandate to undo historical injustice meted out to forest-dwelling communities, and empowers them with "responsibilities and authority for sustainable use, conservation

of biodiversity and maintenance of ecological balance and thereby strengthening the conservation regime of the forests."

In Conclusion

Bawa et al (2020: 25954) suggest "collective effort between citizens and their governments" to resolve rifts in implementing the FRA and reconcile biodiversity conservation with community well-being by envisioning the National Mission on Biodiversity and Human Well-Being. The 4-Cs framework offers a way forward and is a crucial addition to the literature and toolkit on forest governance and management, environmental justice, and sustainable development in India. Breslow et al (2016) recommend stakeholder consultations, participatory processes like public hearings, and ethnographic studies to improve the representativeness of well-being indicators in local contexts and robustness of the framework to suit multiple contexts.

The framework provides opportunities for the MoTA and the MoEFCC, Government of India, the tribal welfare and forest departments in the states, and other governing bodies, including gram sabhas, to implement the FRA in a transparent manner. It also enables the involvement of civil society organisations in assessing the impact of this legislation on forest-dwelling communities, which in turn will allow the public to hold the government accountable for the management of social-ecological systems. Even as the policy and governance discourse sees conservation and human needs in opposition, the framework is a means of addressing concerns raised by the Millennium Ecosystem Assessment to recalibrate economic and institutional arrangements. The two ministries need to synergise efforts to develop well-being indicators for ecosystem assessments across the country, which should include the establishment of areas of coexistence as well as CWHs following due process as laid out in the FRA.

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Biodiversity in and around Farmlands

Food and Nutritional Security and Rural Livelihoods

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Farmlands and farm practices are increasingly getting homogenised due to the all-pervasive intensification of agriculture. Often blurred in this production maximising system is the biodiversity in and around farms—both wilderness and agricultural—that dots farm neighbourhoods. Unfortunately, unlike biodiversity associated with more recognisable landscapes, such as protected areas and nature reserves, loss of biodiversity in and around farms due to agricultural intensification has not gained as much attention as it deserves. This paper highlights the potential roles that it can play to address challenges of food and nutritional security and securing rural livelihoods by drawing upon specific case studies across India and elsewhere.

India is primarily an agrarian economy. An overwhelming majority of the country's population is engaged in food production and allied activities. Employing over 50% of India's workforce, "agriculture, forestry and fishing" contributes to a fifth of the country's economic output in gross domestic product (GDP) terms (India Economic Survey 2018). Agriculture remains the dominant land-use form in India increasing from 92 million hectares to 140 million hectares between 1880 and 2010 (Tian et al 2014). This expansion of agriculture and other land-use forms has placed immense pressure on biodiversity, particularly in forests and grasslands/scrublands. In fact, agricultural expansion and the ensuing land-cover homogenisation remains the major cause of biodiversity loss, water depletion and large-scale environmental pollution, particularly in many tropical countries, including India (Aditya et al 2020; Norris 2008; Rockström et al 2009; Balmford et al 2012). Over 45% of temperate forests, 50% of savannahs, and 70% of grasslands in the tropics have been depleted due to agriculture (Balmford et al 2012). Globally, between 1992 and 2015, area under agriculture increased by 3% (~35 million ha) from the conversion of tropical forests (IPBES 2020). Compared to all other human activities, agricultural expansion alone resulted in the highest number of species extinctions (Butler et al 2007). The gross irrigated area in India expanded fourfold from 22.6 million hectares in 1951 to 95.8 million hectares in 2013–14 making it the largest in the world (Douglas et al 2009; Modak 2018). While such agricultural intensification seems inevitable for meeting the country's food security, land-cover homogenisation caused by intensive agriculture has rapidly eroded agrobiodiversity and remains a perpetual threat to the remaining biodiversity. The loss is not confined to biodiversity but extends to the traditional use cultures, and knowledge associated with this diversity (Dweba and Mearns 2011; Aswani et al 2018).

Ironically though, biodiversity—the anti-thesis of intensive agriculturalisation—forms the basis of all sustainable food production systems. From providing pollinator, pest and diseases mitigating services to maintaining soil health and fertility, biodiversity is intricately linked to enhancing productivity and sustaining it. Besides, in countries such as India, with a large proportion of the small landholders, often less than 0.8 hectares, biodiversity has been an important source of nutrition as well as off-farm, off-crop livelihoods. In this context, incorporating biodiversity-based models of agriculture might not only ensure a sustainable intensification of agriculture (increased yield without causing substantial environmental

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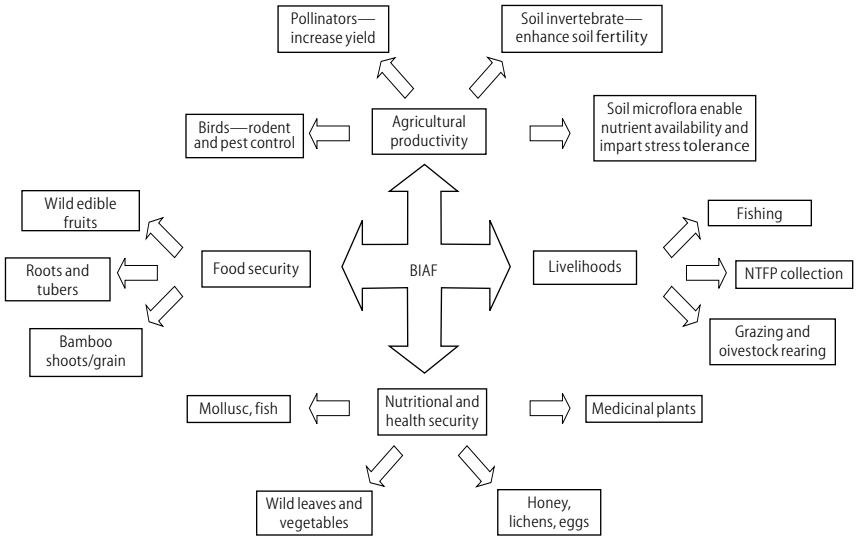
Figure 1: Schematic Representing the Interlinkages of BIAF with Agricultural Productivity, Food Security, Nutritional and Health Security and Livelihoods



Source: Compiled by the Author.

impact and without conversion of non-agricultural land) but could also help augment nutritional security and rural livelihood opportunities. Here, we describe the concept of biodiversity in and around farms (BIAF) and highlight its importance in enhancing agricultural productivity and demonstrate how biodiversity can simultaneously be conserved and utilised in meeting food and nutritional security and in supplementing the livelihood requirements. We also discuss the need to conserve BIAF through policy interventions that in the long run would converge with the larger sustainable development goals.

In the further discussion, we refer BIAF as a subset of biodiversity that includes agrobiodiversity and species harvested for food, fodder, fibre, fuel, medicine and organisms that support agriculture (such as soil invertebrates, soil microbiota, pollinators, etc) as well as those that support agroecosystems comprising largely of pastoral and aquatic systems. BIAF plays a major role in improving soil productivity, enhancing nutrient status, supplementing food and nutritional security and in ensuring climate resilient agriculture (Figure 1). Many trees around farms are important nitrogen fixers and therefore contribute indirectly to agricultural output and myriad other ecosystem services. Large trees act as windbreaks and stabilise crop bunds, thereby directly aiding soil conservation. Numerous examples demonstrate the direct role of BIAF in augmenting agricultural output, and indirectly supporting agriculture through diverse ecosystem services (Tezzo et al 2020; Burkle et al 2013; Garibaldi et al 2013). Furthermore, in much of the tropics, BIAF has also been recognised to contribute in enhancing rural livelihoods (Lehmann et al 2020; Ticktin 2015).

Value of BIAF

Both scientific evidence and traditional knowledge recognise the value of BIAF and diverse food production systems for maintaining ecosystem services such as pollinators, predators of crop pests, reduced vulnerability to climatic and market shocks, soil fertility and efficiency in use of resources (Wagner et al 2019; Garcia et al 2020). A majority of food crops worldwide depend upon insect pollination, such as by bees, for seed and fruit set (Burkle et al 2013; Garibaldi et al 2013; Potts et al 2016; Rader et al 2016; Kremen et al 2018). In India, more than 687 plant species, including crop plants and those in the wild, are estimated to depend upon the Indian rock bee *Apis dorsata* for pollination (Basavarajappa and Raghunandan 2013). Mixed-species flocks of birds residing in tea plantations in the North East India, effectively control caterpillar pests (Sinu 2011, see Box 1). In southern India's Malai Mahadeshwara Hills Wildlife Sanctuary, 92 species of wild edible plants among the BIAF were found to be important sources of food, medicine and beverage for the local communities (Harisha and Padmavathy 2013). Across forest dwelling communities in central India, flowers of Mahua or *Madhuca latifolia*, a common hedge tree frequently raised along crop margins, are collected in summer and used as a traditional food, and are also preserved and sold (Hegde et al 2019). Soil microbial diversity, a component of BIAF, confers protection against soil-borne disease, boosts nutrient availability and water-use efficiency, thereby conferring economic benefits to farmers (Brussaard et al 2007). Yet another important role of BIAF is in facilitating habitat connectivity amongst fragmented agricultural landscapes. Trees and shrubs facilitate the movement of birds, mammals and other species and thereby gene flow, which is often impeded by homogeneous agricultural fields (Crome et al 1994; Burel 1996). Large trees

Box 1: Owls in BIAF and Rodent Control

In India and elsewhere in the world, rodents cause enormous damage to various crops and stored commodities by feeding or by causing indirect damage during on-farm and post-harvest stages. Almost all field crops are vulnerable to rodents. It is estimated that rodents cause about 10%–15% damage to cereal crops and up to 60% damage to oil seed crops, such as sunflower, soyabean and groundnut during preharvest and post-harvest stages (Govind Raj 2018; Alice and Chakraborty 2020). Besides causing millions of dollars loss to agricultural and horticultural crops, rodents are also major carriers of more than 60 diseases that are transmissible to humans and livestock.

Owls which reside in and around farmlands have significantly contributed to managing the rodent population. More than 30 species of owls have been documented in India and they form one of the key biodiversity components of the BIAF. It is estimated that one single barn owl family could remove 3,466 rodents in a full year (Johnson and George 2020). Owls are environmentally friendly pest management alternatives and have indirectly contributed to enhancing crop productivity as well as in reducing the disease risk from rodents. The trees in BIAF form an ideal roosting place for these birds and has ensured their contribution to agricultural productivity.

in farm bunds act as roosting sites for birds and pollinators (see Box 1).

Rural Livelihoods

Rural livelihoods are largely sourced from BIAF. Income from sustainable harvest of aquatic resources (fishes/molluscs from ponds/paddy fields) or from harvesting bamboo shoots, wild fruits and greens around farms help improve rural livelihoods (Ticktin 2015; Setty et al 2008). In the north-eastern ghats, tribal communities depend upon 29 species of woody trees for various livelihood and food requirements (Aditya 2019).[1] The Soppinabettas or foliage forests are minor forests that surround agricultural landscape and are used by areca nut (betel nut) cultivators in a system of agroforestry for their leaf manure and other organic material in the Western Ghat region of Karnataka, where plantations are integrated within forests and farmlands. These forests are retained by farmers around their fields to support agriculture (Nayak et al 2000; Shastri et al 2002). Likewise, paddy is traditionally intercropped with Babul, *Acacia nilotica* on field bunds in agroforestry systems maintained by farmers in parts of Chhattisgarh (Viswanath et al 2000). The biomass obtained from the babul trees are used as fuel, charcoal and timber for agricultural implements by farmers. Certain native woody trees such as *pongamia,* jatropha and simarouba also yield biofuel, and integrating these with farms can provide livelihood opportunities. Toddy tappers depend on palms growing in and around agricultural fields to support their livelihoods in South Indian states (Franco et al 2020). In summary, as evident from a number of examples, BIAF not only enhances resilience against pests and diseases but also contributes to securing food and nutritional security and livelihoods.

Biodiversity-based Models of Agriculture

In the context of the disconnect between agricultural intensification and loss of biodiversity related services, Pimentel (2006) and Perfecto and Vandermeer (2010) proposed a biodiversity-based paradigm of agriculture as a potential solution for the environmental and socio-economic problems associated with the adoption of resource-intensive production systems. Adopting production strategies that allow for biodiversity-based models will yield benefits and has distinct possibilities in improving food and nutritional security. It is not unexpected that such models are already in place in many of the less intensive and subsistence agricultural systems in the world. Lessons from such examples can greatly benefit modern agriculture in making it biodiversity-inclusive.

It is well known that agroecological approaches harness natural ecological processes in agriculture for various functions ranging from pest control to building soil fertility and enhancing production, and can therefore have substantial biodiversity benefits, with significantly higher yields than conventional farming systems (Badgley et al 2007; Pretty et al 2011; Altieri et al 2012). Such methods integrate forests and BIAF with agricultural production systems building on local ecological knowledge, and can therefore have multiple benefits from improving soil fertility and ecosystem services (Kuyah et al 2016; Dollinger and Jose 2018; Lehmann et al 2020). Agroecological principles combined with multiple cropping practices have also been adopted across India, particularly in water-stressed regions (Saratchand 2018). Multicropping offers opportunities for intensification by allowing multiple and simultaneous uses of a single field while also enhancing crop diversity and providing more suitable habitat for fauna, particularly when woodland pasture and agroforestry practices are adopted (Borchers et al 2014). Higher crop diversity at various scales offers stronger biological pest control, thus lowering chemical insecticide dependence, while also enhancing food security and resilience against climate change (Redlich et al 2018).

Village ponds have traditionally supported fish agri-food systems for rural communities across South Asia. Adopting improved fish polyculture and community-based management of fisheries in village ponds provides livelihood opportunities to fishing communities, while also having environmental benefits (Rossignoli and Philips 2020). Aquaculture practices have been integrated into multifunctional paddy-dominated landscapes and provide alternative income sources across India (Tezzo et al 2020; Karim et al 2011). Village ponds could also function as a store for occasional fisheries and thus conserve local aquatic diversity (Karim et al 2011). Such interventions can improve the prospects for sustainable agricultural land use (with very little inputs) in biodiversity rich areas, while enhancing rural incomes (Bawa et al 2007). BIAF can also be harnessed to boost fisheries and freshwater production systems, for instance in the mulberry grove–fish pond multifunctional system in the Pearl River Delta of China, where the fallen parts of the mulberry tree raised along pond edges and excrement of silkworms are applied as feed to fish ponds and organic residue from ponds are in turn applied as fertilisers to the trees (Pimbert 1999).

Policy Interventions

Considering the overwhelming role of BIAF it is important that suitable policy interventions are made to further strengthen and conserve BIAF. This is imperative because in the current scenario, at least in India, there is no distinct recognition of BIAF as it neither is entirely in the forests nor in the farms. Thus, being in an amorphous existence, BIAF is often the first casualty in agricultural expansion and intensification.

Incentivising farm-level conservation activities and biodiversity-friendly food production systems that ensure nutritional security through payment schemes would encourage sustainable use of farmlands that would benefit both biodiversity and communities (Kumar et al 2019). For instance, Payments for Agrobiodiversity Conservation Services (PACS) on the lines of Payments for Ecosystem Services (PES) programmes that prioritise natural resource conservation, have been implemented in Latin America involving the conservation of 130 threatened varieties across several major food crops such as quinoa, potato and maize (Narloch et al 2011a, 2011b; Padulosi et al 2015). PACS have also been attempted for millets in India

and Nepal (Krishna et al 2013). These incentives involve identification of sites with high ecosystem service densities and high threat levels, therefore ensures conservation of BIAF (Drucker and Ramirez 2020).

Agroforestry and farm forestry practices provide up to 80% of the wood and wood products demand in the country (Ahmad et al 2020). Agroforestry plantations have played a role in stabilising the tree cover of the country. Studies show that 69% of India's geographic area retains high suitability for enhancing agroforestry (Ahmad et al 2020; Jat et al 2020). Therefore, promoting agroforestry approaches in accordance with the National Forest Policy, 1998 and the National Agroforestry Policy, 2014 can provide livelihoods, fuelwood and minor forest produce needs of rural populations while helping conserve BIAF. Adopting agroecological approaches can enhance ecosystem functioning and sustainably transform food production systems in order to achieve the United Nations Sustainable Development Goals (SDG), particularly ending hunger, achieving food security, nutrition and sustainable agriculture (SDG 2), ensuring sustainable consumption and production patterns, protect, restore and sustainably use of terrestrial and marine ecosystems (SDG 14 and 15) (FAO 2018).

Sustainable agriculture emphasises sustainable use of resources and enhancing ecosystem services in agriculture for optimising production for achieving maximum sustainable yield while conserving BIAF. Promoting efficient use of resources will increase production while easing pressure on natural habitats. Enhancing water productivity through improved water application, and soil moisture management and conservation practices will result in improved yields. For instance, the system of rice intensification (SRI) has been demonstrated to be capable of reducing water requirements and has been adopted in many rice-growing regions in India and abroad (Glover 2011). Although enhancing efficiency of resource use in agriculture is not possible everywhere, encouraging sustainable use of soil and water could yield significant conservation benefits.

Conclusions

BIAF is a distinct unit of biodiversity, interfacing farmlands with wilderness. By the very nature of its spatial and functional attributes, it forms a unique yet an amorphous body of invaluable repository of flora and fauna that provides numerous services to farmlands that subtend them. Yet, BIAF has largely been ignored in mainstream models of agriculture. BIAF provides food and nutritional security besides livelihood in times of distress, and is vitally important for conserving biodiversity at large given the vast areas under agriculture. BIAF is of particular importance in rain-fed areas with low productivity, and in regions with a high malnourishment index (especially to small and marginal farmers). In particular, BIAF can play a crucial role in alleviating rural poverty and farm distress while conserving biodiversity in the aspirational districts.

In the light of the pre-eminent role that BIAF can play in harmonising the nutritional and economic well-being of people at farm, it is important that policies that specifically address the conservation and sustainable use of BIAF be drawn that further promote and strengthen BIAF. First, from the point of view of land use it would be important to consider how present-day agriculture in the country can or should accommodate BIAF. What should be the relationship of BIAF with the size of landholding? How do different farming systems support BIAF? Considering that a one-size-fits-all approach may not apply given the heterogeneity of farm and farming systems and the varying property ownership and rights over BIAF, it would be important to drive policy that in principle agrees to a land sparing or land sharing, as the case may be. Second, incentivising to have BIAF can drive a massive conservation programme outside of the mainstream conventional biodiversity-rich areas such as the reserved forests and protected areas. The incentives could be tied to market linkages such as is done for shade coffee. Thus, incentives can be driven not necessarily through national or state funds but supported by market forces. Third, policy related to governance of BIAF could help in mapping and managing this important national resource and could be tied to the several ministries including the Ministry of Environment, Forest and Climate Change, Ministry of Rural Development, Ministry of Micro, Small and Medium Enterprises, etc. A lesser but nevertheless important policy could arise from the role BIAF could play in climate resilience and climate disaster management. BIAF could offer succour in times of distress and hence an appropriate policy connecting climate change with BIAF could foster a greater role of BIAF in overcoming challenges posed by climate adversities (IPCC 2018). Finally, many sectoral policies in agriculture and forestry can be suitably amended to include BIAF to offer a more rounded solution to the problem of conservation of biodiversity on the one hand and maximising agricultural productivity on the other.

In closing, as a part of the "National Mission on Biodiversity and Human Well-being" launched by the Government of India, a programme on Biodiversity, Agriculture, Food and Nutritional Security and Rural Livelihoods, expressively attempts to develop a road map for mainstreaming biodiversity-based models of agriculture that would augment food and nutritional security and enhance rural livelihoods. This programme also hopes to develop policies and practices for sustainable management of India's biodiversity that relate to securing India's food and nutritional security and livelihood opportunities.

NOTE

1 These include timber of trees like *Pterocarpus marsupium*, *Adina cordifolia*, *Dalbergia latifolia*, fruits and flowers of *Artocarpus heterophyllus*, *Diospyros melanoxylon*, *Mangifera indica*, *Sterculia urens*, leaves of *Bauhinia vahlii*, toddy from *Aeschynomene aspera* and soapnut from *Acacia sinuata* (Aditya 2019).

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Whither One Health in India?

Challenges to Adopting Global Strategies for Tackling Zoonotic Diseases

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The COVID-19 pandemic has sharply brought into focus how intrusions into natural landscapes are not just environmental concerns, but are also intricately entangled with public health. Little attention has been paid to systemic causes such as large-scale biodiversity loss that underlie the emergence and re-emergence of these diseases. Institutional networks of public and animal health in India that are involved in the surveillance and control of zoonoses are outlined herein. It is shown that the lack of a systematic framework that explicitly involves institutions that manage biodiversity and wildlife health leads to gaps in operationalising a One Health framework in India. Addressing these lacunae requires a supra-ministerial mechanism that brings together public health, ecology, and veterinary and social sciences to combat the threats posed by existing and emerging zoonoses.

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The importance of biodiversity in sustaining the planet is widely accepted. However, any discussion of its critical role in supporting public health was largely confined to some specialised circles, until 2020 when the COVID-19 pandemic produced a potent example that no one could possibly ignore. Zoonotic diseases, that is, diseases that humans and animals contract from each other (WHO-FAO-OIE 2019), are on the rise (UNEP-ILRI 2020), and are often directly linked to the degradation of biodiversity caused by large-scale incursions into natural ecosystems (WHO-CBD 2015; Berthe et al 2018). The risk of zoonoses incidence increases in human-dominated ecosystems (Gibb et al 2020), and the loss of biodiversity is known to exacerbate the risk of disease emergence (Halliday et al 2020). Because zoonoses operate at the interface between humans and animals, in farmed as well as natural environments (UNEP-ILRI 2020), and have an impact on not just health, but also other developmental factors, such as education and livelihoods (Berthe et al 2018; Purse et al 2020), combating it falls across the domains of multiple governmental actors and agencies.

Across the world, zoonotic diseases pose a public health threat with a billion cases and a million deaths each year (Berthe et al 2018). India is a global hotspot for zoonotic diseases (Allen et al 2017). The plague has killed 12 million people since 1898, rabies cause about 20,000 deaths a year, while brucellosis in cattle and buffaloes is estimated to cause annual losses to the extent of about ₹24 million (NCDC 2016). A vast majority of the population interacts closely with livestock and wild animals, and is poorly serviced by public and veterinary healthcare facilities (NCDC 2016; Purse et al 2020). Tackling zoonoses, therefore, is not just a public health crisis, but also a broader governance concern because it demands hitherto unprecedented collaboration across administrative domains.

It is this ideal of intersectoral collaboration that is embodied in the One Health framework to tackle zoonotic diseases. One Health requires that

> all relevant sectors and disciplines across the human–animal–environment interface are involved to address health in a way that is more effective, efficient, or sustainable than might be achieved if not all relevant sectors were engaged. (WHO-FAO-OIE 2019)

The World Health Organization, Food and Agriculture Organization of the United Nations, and the World Organisation for Animal Health jointly advocate a One Health approach through their Tripartite Zoonoses Guide (WHO-FAO-OIE 2019).

This paper examines whether and to what extent measures to tackle zoonoses in India follow the One Health model. It thereby engages with India's capacity to combat endemic and epidemic zoonoses—those that are current concerns, and others that are lurking in future.

Some aspects of One Health, for instance, surveillance, have been critiqued for not addressing the fragility of public health systems in many parts of the world (Calain 2007). This is particularly critical in India where public health has been systemically underfunded (Drèze and Sen 2013). It is, however, beyond the scope of this paper to engage with this, except to note that One Health in India must be cognisant of political and social factors (Leach and Scoones 2013) in order to be effective.

Bearing in mind that international One Health guidelines emphasise the backing of strong sectoral agencies and collaborative policy mechanisms (WHO-FAO-OIE 2019; UNEP-ILRI 2020; Berthe et al 2018), this paper attempts to map existing institutional mechanisms to address zoonotic diseases across the domains of five central ministries—Ministry of Agriculture and Farmer's Welfare (MoAFW), Ministry of Fisheries, Animal Husbandry and Dairying (MoFAHD), Ministry of Health and Family Welfare (MoHFW), Ministry of Environment, Forest and Climate Change, and Ministry of Science and Technology (Figure 1, p 42). It identifies the dissonances and alignment between these ministries (Figure 2, p 43), and locates existing One Health mechanisms, even if not designated as such. Drawing on international guidelines, this paper suggests policy fixes to strengthen India's response to zoonotic diseases using the One Health framing.

This network analysis (Provan et al 2005) is undertaken using publicly available information of national government agencies drawn from annual reports, official websites, programme guidelines, advisories, minutes of meetings, and inter-ministerial communications. Although integral components of One Health, the paper excludes antimicrobial resistance, marine and freshwater diseases, and state government institutions from its scope of analysis. It also restricts itself to government institutions, although there have been notable One Health initiatives led by non-governmental organisations in collaboration with government agencies (Yasobant et al 2019; Sekar et al 2011; Chatterjee et al 2016). Others have explored policy drivers that contribute to India's vulnerability to zoonotic diseases (Thomas et al 2019), and analysed problems with institutionalising One Health at the city level (Yasobant et al 2020).

Institutional Structures

Under India's Constitution, public and veterinary health falls within the domain of state governments, while the mandate for controlling diseases and outbreaks is shared by the central government and the states. Each of the ministries under review (Figure 1) has several institutions and specialised programmes that undertake research and surveillance of zoonotic diseases, support disease reporting systems, and take up activities for the control and mitigation of diseases. Some of these interact with each other at various administrative and operational scales, and at different levels of efficacy. In the sections below, we review these structures and networks in further detail.

Research and surveillance: One of the main thrust areas of the animal science division under the Indian Council of Agricultural Research (ICAR) of the MoAFW is the surveillance and forecasting of zoonotic diseases. The Indian Veterinary Research Institute (IVRI), Izatnagar under ICAR has a veterinary public health division that aims to apply veterinary knowledge to address public health concerns through its mandate that includes research on the prevention and control of zoonoses (IVRI 2018d). The IVRI engages with wildlife health through its parasitology division, Centre for Wildlife Conservation Management and Disease Surveillance (CWC), and the Centre for Animal Disease Research and Diagnosis (CADRAD) (IVRI 2018a, 2018b, 2018c).

The CADRAD aims to be a national referral laboratory on animal diseases, and lists the development of a monitoring and surveillance system as a primary objective (IVRI 2018a). It operates as the central laboratory under the Directorate of Animal Health of the MoFAHD (DAHD nd). Along with four regional laboratories and 250 networked laboratories across ICAR institutions, universities, and state laboratories, they play a prominent role in the surveillance and diagnosis of zoonotic diseases, including avian influenza (DAHD nd). The National Institute of High Security Animal Diseases (NIHSAD), Bhopal is an ICAR institution with the mandate of research on exotic, emerging, and re-emerging animal diseases (NIHSAD 2020). It also shares data on diseases with MoFAHD (NIHSAD 2015).

On the public health side, the Indian Council of Medical Research (ICMR) of the MoHFW is the national body that coordinates medical research in India. The ICMR oversees a number of institutions and research facilities that work on zoonotic diseases. The National Institute of Virology (NIV), Pune undertakes epidemic investigations, diagnosis, and surveillance of a number of zoonotic diseases (ICMR 2019). The ICMR has proposed a centre for One Health under NIV, in collaboration with ICAR's Maharashtra Animal and Fishery Sciences University, Nagpur (Andrabi 2019).

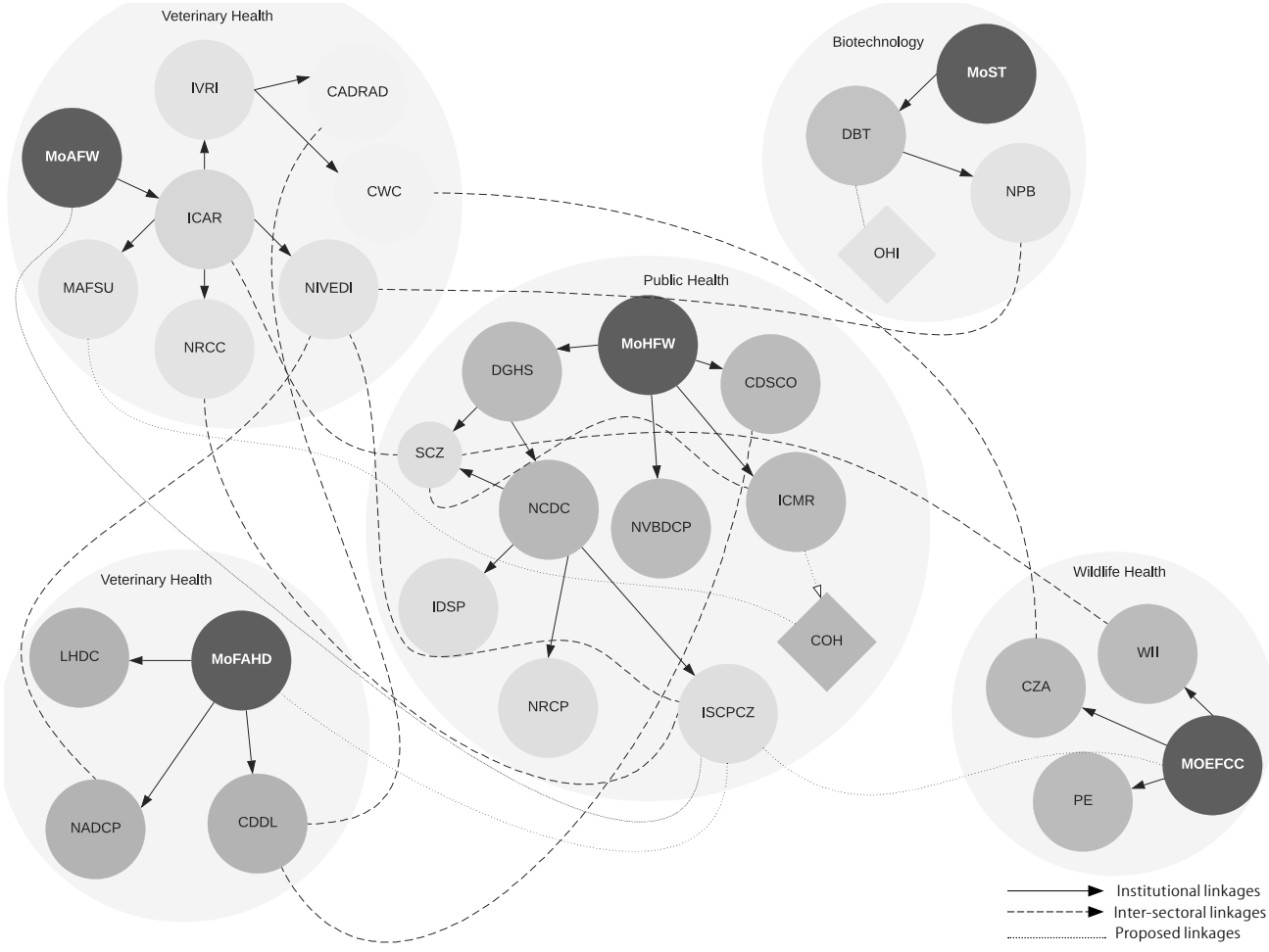
Through its National Institute of Cholera and Enteric Diseases, Kolkata, National Institute of Malaria Research, New Delhi, Vector Control Research Institute, Puducherry, National Institute of Traditional Medicine, Belagavi, National Institute of Epidemiology, Chennai, National Institute of Research in Tribal Health, Jabalpur, and Regional Medical Resource Centres, the ICMR undertakes vector surveillance, hospital-based surveillance, and has sentinel surveillance sites for a range of zoonotic diseases (ICMR 2019; NIRTH 2017). The MoHFW's National Vector Borne Disease Control Programme (NVBDCP) also has a mandate that includes zoonotic diseases, such as Japanese encephalitis or acute encephalitis syndrome (NVBDCP 2014).

Surveillance platforms and databases: The MoHFW, MoAFW, and MoFAHD support digital platforms for the reporting and visualisation of surveillance data. Under ICAR, the National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bengaluru hosts the National Animal Disease Referral Expert System (NADRES), a dynamic virtual database of livestock disease (NIVEDI 2015). The NADRES receives data on incidences of endemic and emerging diseases of livestock and

Figure 1: Institutional Outline
Institutional Structures Addressing Zoonotic Diseases in India

Figure 2: Network Analysis Map

Plot of Institutional Networks Addressing Zoonotic Diseases in India



Veterinary health: MoAFW=Ministry of Agriculture and Farmer's Welfare, CADRAD=Centre for Animal Disease Research and Diagnosis, CWC=Centre for Wildlife Conservation Management and Disease Surveillance, ICAR=Indian Council of Agricultural Research, IVRI=Indian Veterinary Research Institute, MAFSU=Maharashtra Animal and Fishery Sciences University, NIVEDI=National Institute of Veterinary Epidemiology and Disease Informatics, NRCC=National Research Centre on Camel, MoFAHD=Ministry of Fisheries, Animal Husbandry and Dairying, CDDL=Central Disease Diagnostic Laboratory, LHDC=Livestock Health and Disease Control Scheme, NADCP=National Animal Disease Control Programme for Foot and Mouth Disease and Brucellosis.
Biotechnology: MoST=Ministry of Science and Technology, DBT=Department of Biotechnology, NPB=National Programme on Brucellosis, OHI=One Health Initiative.
Wildlife health: MoEFCC=Ministry of Environment Forest and Climate Change, CZA=Central Zoo Authority, PE=Project Elephant, WII=Wildlife Institute of India.
Public Health: MoHFW=Ministry of Health and Family Welfare, ICMR=Indian Council of Medical Research, IDSP=Integrated Disease Surveillance Programme, ISCPCZ=Inter-sectoral Coordination for Prevention and Control of Zoonotic Diseases, NCDC=National Centre for Disease Control, NRCP=National Rabies Control Programme, NVBDCP=National Vector Borne Disease Control Programme, COH=Center for One Health, CDSCO=Central Drugs Standard Control Organisation, SCZ=Standing Committee on Zoonoses.

poultry through its 15 reporting sub-units across the country (NIVEDI 2015). NADRES is also fed by monthly updates from state animal husbandry and veterinary agencies, which fall within the domain of the MoFAHD.

Falling under the Livestock Health and Disease Control (LHDC) Scheme of the Department of Animal Husbandry and Dairying (DAHD) of the MoFAHD, the National Animal Disease Reporting System (NADRS) is a similar livestock disease reporting platform that collates information from 7,032 units across the country, down to the taluk level (DAHD 2019b). With the scope of daily incidence reporting through a mobile application, NADRS supports a near real-time disease monitoring and surveillance system (NADRS nd).

The National Centre for Disease Control (NCDC), New Delhi under the purview of the MoHFW's Directorate General of Health Services runs the Integrated Disease Surveillance Programme (IDSP), a national surveillance programme of potentially epidemic diseases (IDSP 2020). It also has an outbreak response component in the form of Rapid Response Teams (IDSP 2020). IDSP draws on a network of 776 reporting units in the public health sector (IDSP 2020). About 96% of districts update the platform with weekly surveillance data (NCDC 2017). Through these efforts, the IDSP collates data on zoonotic diseases, such as anthrax, leptospirosis, and Kyasanur forest disease among others (MoHFW 2017).

Control and mitigation of diseases: The DAHD's Assistance for Control of Animal Diseases makes funding available to state governments for the control of zoonotic disease, bolstering laboratory facilities, and capacity building of veterinarians (DAHD 2019a). The DAHD recognises the importance of collaboration between state public and veterinary health departments and

advises state governments on the creation of a post of public health veterinarian (Bambal 2017).

NCDC is India's primary agency for disease control. The National Rabies Control Programme under NCDC makes an attempt at operationalising One Health with technical guidelines for the animal disease component being developed in collaboration with the MoFAHD and the MoAFW (NCDC 2020c). It has also developed a draft National Action Plan for Eliminating Dog Mediated Rabies from India following a One Health framing that clearly demarcates an inter-sectoral planning and reviewing mechanism that involves the MoFAHD, MoHFW, MoAFW, and the MoEFCC in addressing the animal and human disease components of rabies (NCDC 2020a).

The MoHFW's Department of Health Research has a network of about 106 Virus Research and Diagnostic Laboratories (VRDLs) across the country, and runs the Establishment of National Research Laboratories for Managing Epidemics and National Calamities Scheme through which it seeks to strengthen the existing surveillance and diagnostic infrastructure (DoHR 2020). Through this network, this scheme aims to combat epidemics and put measures in place to address emerging and re-emerging diseases (DoHR 2020). It is envisaged that a strengthened network of VRDLs will be in a position to better coordinate with state public health systems, IDSP, and NVBDCP (DoHR 2020).

Network linkages: The MoHFW's Department of Health and Family Welfare instituted the Programme for Inter-sectoral Coordination for Prevention and Control of Zoonotic Diseases (Inter-sectoral Zoonosis Programme) under the Twelfth Five Year Plan (2012–17), with the aim of utilising IDSP systems to develop a multiscale, inter-sectoral coordination mechanism to address "zoonotic diseases of public health importance" (NCDC 2019). Towards this, it looked to redeploy existing resources and infrastructure already in place within the veterinary, public health, and wildlife sectors, with most of its functionaries drawn from the IDSP system and the state health departments (NCDC 2019). The national Standing Committee on Zoonoses was constituted in 2006 under the joint chairpersonship of the Director General of Health Service, MoHFW and Director, NCDC. This inter-sectoral committee is constituted by members from a range of ICAR and ICMR institutions, and state health departments, with the Wildlife Institute of India (WII) as the lone MoEFCC representative (DGHS 2006).

Other One Health efforts include IVRI's Outreach Programme on Zoonotic Diseases with NIVEDI as a collaborator (NIVEDI 2019), and a One Health Initiative that was launched at the One Health India Conference convened by the Ministry of Science and Technology's Department of Biotechnology (DBT), in partnership with the MoFAHD, MoAFW, and MoHFW (OHIC 2019). The conference proposed the collaborative development of a One Health Roadmap and outlined some key priority areas, including the establishment of dedicated funding channels, a national policy on One Health, and an inter-ministerial One Health Commission (OHIC 2019).

This section outlines that national ministries are broadly cognisant of One Health principles and that there are a number of inter-ministerial collaborations on zoonoses in India (Figure 2). However, these are largely disease-specific and there is inconsistency in terms of involving all the relevant sectors. Despite some promising efforts (Yasobant et al 2019), the country's overall response to zoonotic diseases is fragmented (Sekar et al 2011), and it is largely a case of different sectors focusing on their own priorities. Many of the collaborative initiatives that exist operate between the MoAFW and MoFAHD, which cannot exactly be termed inter-sectoral given that the latter was a department within the former until 2019.

Missing the Inter-sectoral

In a scenario where inter-sectoral collaborations are not institutionalised, a number of aspects of tackling zoonotic diseases are bound to fall into the gaps. For instance, the MoFAHD's DAHD steers the National Animal Disease Control Programme for Foot and Mouth Disease and Brucellosis, a central sector scheme that aims to combat risks to human and animal health (NADCP 2019). This programme that envisages village-level serum screening for brucellosis, shows some promise of inter-sectoral collaboration in the scope it provides to involve veterinary officials at the district and subdistrict level (NADCP 2019). It receives laboratory support from the MoAFW's NIVEDI (NADCP 2019). NIVEDI is also associated with DBT's Network Project on Brucellosis. Therefore, the agriculture and animal husbandry sector, and the biotechnology sector to a smaller extent, engage with brucellosis. Yet brucellosis is a re-emerging zoonotic disease that particularly poses risk to those who work in the dairy and meat processing industries (Lindahl et al 2020). Furthermore, brucellosis is also a disease of concern for wildlife (Godfroid et al 2011). Yet neither the MoHFW nor the MoEFCC seem to have any role to play in brucellosis control.

The absence of the wildlife sector from zoonoses initiatives is a recurring feature. NIVEDI, which sees itself as well placed to spearhead One Health efforts in collaboration with other animal and public health institutions (NIVEDI 2015), does not make any reference to wildlife health. This is despite epidemiological surveillance of diseases of wildlife listed as an area of work (NIVEDI 2020). NIHSAD, which refers to One Health as an opportunity to create collaborative surveillance programmes involving veterinary and medical practitioners (NIHSAD 2015), also leaves wildlife out of the fray. State wildlife departments are prominently absent in the Inter-sectoral Zoonosis Programmes, whereas state public health and veterinary departments are mentioned (NCDC 2019).

Despite the well-accepted links between zoonotic diseases in wildlife and humans, the MoEFCC does not play a prominent role in addressing zoonotic diseases. The WII, Dehradun is a designated member in a number of zoonotic disease programmes of other ministries, but does not take an active role, even choosing to be absent from important deliberations such as that of the Standing Committee on Zoonoses (DGHS 2019). In its recent advisory addressing the import of "exotic live species" it does not make any references to zoonotic diseases (MoEF 2020), and appears largely oblivious to this concern (MoEF 2020).

One of the MoEFCC's initiatives on zoonotic diseases is the preparation of a standard operating procedure on anthrax developed by the project elephant division, that has an inter-sectoral bent, albeit marginally, in that it seeks the involvement of a district veterinary officer in tackling anthrax in captive and wild elephants (MoEF 2019). WII has a department of wildlife health management that has a mandate for the integration of veterinary medicine and wildlife management, and is envisaged as an interdisciplinary initiative that will involve the public health sector (WII 2020a). However, other than broad references to training programmes, consulting services for government departments, and a couple of studies on wildlife diseases (WII 2020a, 2020b), there is little clarity on the role of this department in tackling zoonotic diseases.

Existing One Health programmes in India also suffer from a lack of authority. An initiative, such as the Inter-sectoral Zoonosis Programme has limited scope to foster inter-sectoral collaboration because it is institutionally situated within the MoHFW. While it can suggest the involvement of veterinary and wildlife authorities at the state and sub-state levels (NCDC 2020b), it does not have the authority to mandate it. Even though the regional coordinators have a mandate of fostering inter-sectoral collaboration, the reporting requirements of the Inter-sectoral Zoonosis Programme indicate that administrative tasks such as the development of standard operating protocols for diagnosis of zoonotic diseases are the main focus area (NCDC 2019).

Regional coordinators do not face the same measure of scrutiny regarding their efforts to coordinate the state zoonosis committees, identify state focal points, or actively involve state veterinary and wildlife departments. This may simply be borne from practical considerations on account of the limited capacity of this programme to achieve these targets. Similarly, although the Standing Committee on Zoonoses can direct MoFAHD and ICAR institutions to include health officers when developing guidelines for animal diseases (DGHS 2019), it does not necessarily have the power to enforce this. This may be a reason why the committee is admittedly lagging behind its goals (DGHS 2019).

The IDSP is largely a data-collating exercise with some limited data-sharing between different sectors. It remains a surveillance platform that is entirely public health focused, with some capacity for training modules, including epidemiological training at the state and district levels (IDSP 2020). It is also admittedly human-centric with no integration of veterinary and wildlife disease data as it stands (IDSP 2020). A reconstitution exercise undertaken for state and district surveillance committees in 2019 to ensure their "revival" suggest that these are not entirely functional, although the revision promisingly specifies the appointment of representatives from the environment, wildlife, and animal husbandry department at the state and district levels to both bodies (MoHFW 2019).

Despite these institutional barriers, there is an increasing realisation of the relevance of the One Health framework in combating zoonoses. In 2019, the Standing Committee on Zoonoses proposed to reconstitute itself to encourage better representation of the MoEFCC, and to assign a nodal officer under each ministry to oversee collaboration (DGHS 2019). A memorandum of understanding between the MoFAHD, MoAFW, MoHFW, and WII in this regard was also expected (NCDC 2020b). Similarly, requests from the MoHFW to MoFAHD to nominate veterinarians to the Rapid Response Teams under IDSP (MoHFW 2017) led to 27 states filling the post of veterinary consultant, while 24 states and 444 districts established Rapid Response Teams that included veterinarians (DGHS 2019).

At the level of individual institutions and programmes there are yet more instances of collaboration. NIVEDI aims to link NADRES data with NADRS for quicker and laboratory-confirmed disease reporting from subdistrict veterinary units (NIVEDI 2015). The MoFAHD makes similar overtures (NADRS nd), although it is still unclear how both these platforms will talk to each other. NIVEDI is engaged in a national surveillance project for anthrax which aims to develop response strategies that bring together multiple government agencies across the public health, animal health, and environmental sector (NIVEDI 2019). Some guiding principles and outlining of the role of diverse ministries and agencies with a One Health framing has been attempted by NCDC through a technical bulletin with respect to Kyasanur forest disease (NCDC nd). Although these efforts are welcome, they still fall short of establishing a fully functional and integrated One Health mechanism to address zoonotic diseases (Yasobant et al 2020).

Operationalising the One Health Approach

International One Health guidelines prescribe a series of measures towards establishing a One Health framework. Among others, it calls for making the existing sectoral systems across public, veterinary, and wildlife health institutions robust (Berthe et al 2018). Within the MoEFCC, only the Central Zoo Authority appears to have some inter-sectoral linkages as a result of its association with ICAR-IVRI's CWC (IVRI 2018c). The absence of institutions that can comprehensively address zoonotic diseases prevalent in wild animals, and the dearth of veterinary professionals with wildlife experience (Aggarwal 2020) are indications of the structural flaws in the One Health initiatives undertaken thus far in India. The schema of IDSP, NADRS, and NADRES make data-sharing between the animal and public health sectors difficult (Dinesh et al 2020), and the absence of data from the wildlife sector remains a major lacuna in operationalising One Health efforts (DGHS 2019).

International One Health Guidelines strongly favour the creation of a multisectoral coordination mechanism that is institutionally located a level above sectoral ministries (WHO-FAO-OIE 2019). The limitations of a forum, such as the Inter-sectoral Zoonosis Programme make a good case for a supra-ministerial One Health mechanism that is not located within or reporting to a single ministry. The One Health Initiative led by DBT suffers from much the same concerns since it is also located within a single ministry. Further, it is largely a continuation of discussions on One Health within and across ministries and programmes, without actually establishing the institutional mechanisms, functionaries, and funding sources necessary to create a One Health framework for the country.

Above all, a sustainable One Health framework calls for dedicated funding channels (WHO-FAO-OIE 2019). The existing allocations for zoonotic diseases are ministry-specific, and the absence of funding for inter-sectoral collaboration hampers India's One Health efforts. A recent meeting of the Standing Committee on Zoonoses, which discussed financial and human resource support for states to tackle zoonotic diseases, assumed budgetary allocations to be the sole responsibility of the MoHFW (DGHS 2019). Within the MoHFW too, under the Twelfth Five Year Plan (2012–17), ₹400 crore were sanctioned for establishing branches of NCDC across all states (NCDC 2017). Contrast this with the meagre funds allotted to the Inter-sectoral Zoonosis Programme—₹8.68 crore for the period 2017 to 2020 (NCDC 2019).

Conclusions

As we have shown, designing and operationalising an intersectoral One Health framework is challenging. Zoonotic diseases make the links between biodiversity and health blatantly, and dangerously, obvious. However, further work is required to effectively integrate these links into the One Health framework (CBD 2017). In this paper we have highlighted India's institutional networks on zoonoses and identified sectoral overlaps, gaps, and synergies. In doing so, this paper undertook a first-cut institutional network map of zoonoses control in India, which is a critical step to developing a One Health framework (WHO-FAO-OIE 2019). A more comprehensive governance network analysis that also includes state agencies would present a fuller picture, particularly if it is undertaken jointly by key sectoral agencies (Berthe et al 2018), that can then also formulate policy mechanisms to address the gaps.

At the heart of it, One Health requires a broad spectrum of collaboration and ownership across core and related ministries, departments, and programmes (WHO-FAO-OIE 2019). The key step to operationalising One Health is forming the right partnerships and a joint interdisciplinary vision (Berthe et al 2018). For example, an interdisciplinary study on Kyasanur forest disease by government and non-governmental institutions from the public health, veterinary health, and the wildlife and forestry sectors revealed novel ecological and sociological risk factors for the emergence of the disease (Purse et al. 2020). The project used a co-production approach to model new hotspots of outbreaks, and integrated with public health practitioners to implement mitigation measures such as vaccination ahead of the outbreak season (Purse et al 2020).

The "OneHealth and Zoonoses" programme of the proposed National Mission on Biodiversity and Human Well-being proposes to bridge many of the gaps highlighted here by setting up multi-agency sentinel surveillance sites that will serve as open research platforms for systematic and integrated One Health surveillance. Further it will provide the necessary funding and institutional framework to build capacity for the next generation of One Health actors from diverse fields. It will also enhance infrastructure for One Health surveillance across India, including guiding the setting up of high security biosafety laboratories. Operationalising One Health at a national scale will require the setting up of the necessary inter-ministry and supra-ministry coordination cells to support the mission. A whole-hearted government-backed effort towards this will only come when the outcomes and impacts of zoonotic diseases in every sphere—the economy, food safety, and poverty alleviation, for instance—are visible to all. The wake of a zoonotic pandemic is perhaps the right time for such a push.

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Restoring Employment and Rural Landscapes

Can Ecological Restoration Usher Rural Economic Revival in the 'Post-pandemic' Period?

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The national lockdown unleashed an unprecedented economic crisis on millions of poor urban migrants who lost their employment and were forced to "reverse-migrate" to their homes on foot over vast distances. However, the rural areas—from where they originated—were already reeling under severe and rapid economic and ecological degradation and were ill-equipped to deal with this sudden increase in the demand for livelihood opportunities. In this paper, we demonstrate the potential of "ecological restoration" of primarily rural landscapes in India to generate rapid and high-volume employment along with other co-benefits.

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The COVID-19 pandemic has had a huge impact on human health and economy globally, infecting over 52 million and killing over 1.28 million.[1] With the pandemic still going strong as of mid-November 2020, and several countries still in full or partial lockdown mode, the collateral damage on the global economy has been devastating. According to the International Labour Organization, over one billion workers worldwide are at a high risk of pay cuts or losing their job currently. Gross domestic product (GDP) growth in 2020 is expected to decline by 6% globally.[2] In India, such economic disruption is set to double the number of people who are facing acute food insecurity (IPC/Phase 3 or worse)[3] from 135 million in 2019 to a staggering 265 million in 2020, primarily because of losses in their sources of income, livelihood and employment during the lockdown (UNWFP 2020).

The recent analysis by Goodman et al (2020) suggested that the disruption in economic activities, the resultant hunger and malnutrition may end up being a bigger killer than the pandemic itself. Among the worst affected are the "poor"—precariously employed migrants in countries where surprise lockdowns were announced without providing any prior, anticipatory economic relief, as in the case of India. The acuteness of lockdown's huge economic impacts was ultimately felt and distributed as per the employment status of people: those who could retain employment faced little or no impact. On the contrary, they supposedly enjoyed their extended time with near and dear ones while indulging in and exhibiting their sophisticated baking skills on social media (Kundal 2020). For the rest, whose employment and livelihood evaporated almost overnight, it was nothing short of a nightmare. Thus, the pandemic is as much a crisis of employment as it is about human health. Unlike the serious intent that state agencies in India displayed towards tackling the health crisis, restoring and creating new sustainable employment opportunities unfortunately did not receive the attention it deserved.

This paper addresses the well-documented case of lockdown-induced reverse-migration of millions to their native homes to enquire about the employment opportunities that may await them there. To this end, we first briefly touched upon the drivers and causes of the large scale and abundant supply of rural labour for precarious and undignified city-based jobs. Following that, we critically examine if and how rural India—the great source of cheap labour—can rapidly transform itself as an employment hub, following the huge surge in demand for village-based

jobs. Finally, we explore the potential of ecological restoration, with the reclamation of structural and functional biodiversity as an explicit goal, to meet this sudden demand. Beyond its employment opportunities, we also ask if the restoration of rural ecology and biodiversity can restore the dignity that the city robbed them off, each and every time they landed on its shores, to escape the economic and ecological distresses, caste hegemony and social immobility of Indian villages. The loss of dignity, which the pandemic merely amplified through the sheer scale of reverse migration, ultimately became an enduring, grand spectacle of human misery (Gill 2020; Parth 2020).

Pandemic, Lockdown and the Precariat

India's first national-level response to arresting the pandemic was a total lockdown beginning on 24 March 2020, which resulted in the overnight loss of employment for over 55 million in the informal sector alone (Gupta et al 2020). Over three phases, the 75-day-long lockdown ultimately led to the reverse migration of an estimated 140 million workers from the cities to their homes under sub-human conditions (Dandekar and Ghai 2020). A "pre" and "post" COVID-19 analysis indicated a 30% fall in employment[4] in April 2020 (282.2 million) vis-à-vis April 2019 (403.7 million), and 75% of this share was attributed to the small traders, hawkers and daily wage labourers (Vyas 2020). Overall, the number of farmers and farm labourers rose by 14.9 million, as of July 2020, which is barely one-tenth of the estimated people who moved back to their villages, indicating that ~90% of the reverse migrants still remain unemployed (Pandit 2020; Vyas 2020).[5]

Such massive unemployment could have been pre-empted if the lockdown were to be preceded by well-thought-out strategies to sustain employment of the economically most vulnerable groups. Even though the proponents might argue that the sudden and surprise lockdown was a necessity and therefore there was not enough time to plan alternative employment strategies, however, in retrospect, the lockdown seems like an unplanned knee-jerk response by the state, which reflected lack of adequate understanding of India's poverty and employment. In a scenario where if the state was adequately appraised of the magnitude of its precariat class and was sufficiently willed to prepare alternate income/employment strategies before imposing a total lockdown, penury and suffering associated with the massive unemployment could have been avoided. For instance, well-planned employment policies in Chile not only prevented the poor from falling into poverty traps during the economic "adjustment" crisis of the early 1980s, but also reduced the proportion of poor from 45% in 1986 to 28% in 1994. On the other hand, poverty rates rose from 17.3% in 1985 to 54.7% in 1990 in Peru, where no such policies were in place (Graham 1997, 2001).

Cities and Employment during the Pandemic

In India, employment strategies could not be possibly planned in cities during the pandemic because the most congested urban cores were among the zones of highest economic activity. Unfortunately, they emerged as the first hotspots of the disease and, till date, remain among the worst hit. However, high vulnerability to disease pandemics and a massive but highly fragile unorganised economy was clearly not the way urban centres were imagined during the framing of the economic liberalisation policy of India of 1991 (Nagaraj 2017). In fact, cities were envisaged as mass generators of employment, which would attract labour from low productivity farm-based activities to high-productivity industrial manufacturing (Ahluwalia 2016). In the last 30 years, the construction sector absorbed the labour, providing a third of the total jobs across all other sectors. However, the industrial manufacturing sector never took off as planned. As a result, over 92% of the total workforce in cities are in the informal jobs, which lack clear terms of fair work contract and are effectively casual wage earners. Such workers often survive in sub-human, unhygienic conditions in the cities (Babu et al 2017).

The economic liberalisation policies led to a spurt in the growth of urban economies, whose contribution to the GDP grew from 45% in 1990 to almost 70% in 2020 (*Business Standard* 2014). This increased demand of labour spurt by such rapid urbanisation was mainly supplied by the villages where the liberalisation had a completely opposite impact. Liberalisation was expected to create a favourable shift in the terms of trade for Indian agriculture and augment surplus. Such surpluses could be reinvested to improve land and allied resources, ultimately boosting the agricultural productivity and growth rate (De Roy 2017). But contrary to expectations, terms of trade for agriculture did not improve; instead it went through a phase of rapid decline. The GDP share of agriculture output declined from 25.2% in 1990 to 11.8% in 2014 when the total GDP grew from 1.06% in 1991 to 8.5% in 2016. According to De Roy (2017: 67), the decline was further intensified due to "reduction in capital formation in agriculture, inadequate expenditure on irrigation and extension services in rural areas, and a dearth of cheap institutional credit." As a result, farmland in India, which steadily grew from 1.75 million sq km in 1965 to 1.82 million sq km in 1991, started shrinking from 1992 onwards to 1.79 million sq km in 2010.[6] Detailed case studies such as Kar et al (2018) showed that the rural area in just one district of Maharashtra reduced to one-sixth of its initial size.

Such a decline resulted in huge rural unemployment and pauperisation, thereby intensifying livelihood insecurity, decline of agriculture-driven economy, which ultimately had a trickle-down effect on the non-farm jobs (Karthikeyan 2019). Change in land use from farm to industry and real estate were ecologically unsustainable as they were accompanied by loss of biodiversity, mismanagement of the water resources and deterioration of the soil quality due to intensive farming practices (Kumar 2019).

Recent studies indicate at "commodification," and "capitalist accumulation" of agricultural land. Real estate, industrial zones, extractive mining blocks and special economic zones (Levien 2018; Patil and Purushothaman 2020; Silva et al 2020) have been identified as important ultimate drivers of degradation and massive changes in land use of rural landscapes, although the pathways are complex and entangled (Chakraborty and Ray 2017; Goswami and Ganesh 2019). For example, "commodification of land" displaces a variety of production systems, ranging from small-scale farming to "unused" land, such as forests and savannas on which local communities often depend for

multiple ecosystem services. Such "unused" non-farm natural ecosystems, including water resources, often provide ecological services critical for maintaining farm health and productivity. Land use change from farm to real estate, industries and mining often leads to appropriation or degradation of water resources and thereby has a negative impact on local and downstream farmers. Even within agriculture, the impacts of liberalisation and markets typically shift small, subsistence-scale food cropping to intensified cash crop farming (D'Odorico et al 2017).

For example, in Kodagu, Karnataka, commodification driven by the global coffee market changed the land use and land cover patterns, ultimately resulting in land degradation in the small-scale rice paddies (Ambinakudige and Choi 2009). Similarly, in Meghalaya, which is considered as a resource frontier, liberalisation policies ultimately resulted in massive land use change from forest to limestone mining and associated cement industries (Goswami et al 2016), which polluted rivers, streams and the air and adversely affected small-scale orange and *jhum* farm productivity (Goswami et al 2012; Goswami and Jesudasan 2012). Markets ultimately also led to large-scale adoption of cash crops that resulted in further ecological degradation of land, loss of biodiversity (Goswami and Ganesh 2019) and livelihood, nutritional security (Behera et al 2016), which ultimately leads to a decline in the overall quality of life in the rural landscapes.

Such convergence of economic policies, environmental degradation and decline of farm-based economy and socio-economic aspiration drove massive migration from rural to urban India. Bulk of such migration has been distress-driven and often in search for employment and income opportunities in the cities. However, if the employment available in urban areas were gainful, they ought to have driven rural poverty down due to the expected remittances from the cities. Yet, latest data indicate that rural poverty rose nearly 4% points between 2011–12 and 2017–18 to 30% (Bhattacharya and Devulapalli 2019). Thus, at this critical juncture, can we try to take a critical look at how rural India should be allowed to handle this crisis? How will rural India, which continues to be in distress, handle the huge employment demand due to reverse migration? Can we design employment opportunities around investments earmarked by the state which use this crisis as an opportunity to reclaim and restore the rapidly degrading rural landscape?

Reclaiming the nature and restoring the rural landscape can have co-benefits in terms of creating future resilience against pandemics too. The COVID-19 pandemic was a result of zoonosis, that is, the highly contagious virus spilled over from animals to humans. Recent increase in the incidences of novel zoonotic diseases has been attributed to the anthropogenic destruction of biodiversity driven primarily by ecologically unsustainable economic growth measured through GDP (Gibb et al 2020; Quammen 2013). In fact, it may be far cheaper to invest in preventive measures, such as protecting existing biodiversity rich ecosystems and restoring degraded areas ($17–$26 billion) compared to overall economic and human cost of the next pandemic which could cost us about $16 trillion (Dobson et al 2020). Therefore, it is important that the reimagined development (planned beyond cities to create rural employment) must be modelled on refined ideas of Sustainable Development Goals (SDGs) and human well-being rather than mere GDP growth.

Ecological Restoration as an Employment Opportunity

Here, we examine the globally tested and proven proposition of ecological restoration, which will restore the degraded landscapes while providing an enduring source of employment, along with co-benefits tied to meeting climate and biodiversity conservation goals. Existing global studies indicate that restoration has the potential to emerge as a cost-effective opportunity for employment generation and carbon sequestration (Calderon 2017; Driver and Mukhadi 2019). In fact, landscape restoration in the United States (US) has been reported to be twice as effective at creating jobs per unit of investment in comparison to the oil and gas sector (Calderon 2017). Studies from South Africa reported that for every new job created for protecting biodiversity, five additional jobs are created in ancillary sectors that uses biodiversity (Driver and Mukhadi 2019).

India has a huge restoration potential given the rapid rate of degradation of its natural landscapes: it is estimated that 96.4 million hectares or 29.32% of India's total land area are in various stages of degradation (Kumar 2019). Degraded lands produce serious consequences such as decreased food security, degraded environment, enhanced migration and increased poverty. It also results in the loss of ecosystem services, livelihood opportunities and degradation of human health and other constituents of well-being. A study commissioned by the Ministry of Environment, Forest and Climate Change (MoEFCC), has estimated that land degradation in India has incurred monetary losses to the tune of 2.5% of its GDP in 2014–15 (Sharma and Chopra 2018).

This accords critical importance to restore these degraded lands, which will not only rejuvenate the flow of ecosystem services and augment biodiversity values but will also generate substantial employment opportunities. Many case studies showcase this. Consider, for example, Naganadhi Rejuvenation Project in Vellore district of Tamil Nadu. By utilising ₹5 crore ($6,67,000) over five years, it has restored and rejuvenated Naganadhi watershed, which had gone dry for 15 years. In the process, 20,000 women received employment, the water table rose by over 6 m, 9,000 ha of agricultural land was reclaimed and over 60,000 people were ultimately benefited (Chakrapani 2019).

With the Government of India (GoI) announcing multiple financial packages to rapidly boost the rural economy from the pandemic induced distress, we analyse and discuss the employment opportunities in and benefits of biodiversity-driven ecological restoration projects in selected sites of India. Our effort is consistent with the objectives of the National Mission on Biodiversity and Human Well-Being (NMBHWB) which aims to develop a comprehensive understanding of the impacts of climate change on ecosystems and ecosystem services and to assess the role of well-functioning and conserved ecosystems in increasing resilience to climate change. A key output would be comprehensive guidelines for a climate mitigation strategy that goes beyond a tree-planting carbon-centric focus towards biodiversity and

ecosystem service-friendly ecological restoration in diverse biomes and co-benefits for future adaptation options. In addition to that, we estimate the finances required to create economically viable, environmentally sustainable and an enduring form of employment through ecological restoration.

Literature classifies employment opportunities from restoration into four main categories: (i) direct: one-time employment generated during the period of restoration intervention, (ii) indirect: additional employment generated in ancillary sectors resulting from higher demand of inputs for restoration through backward linkages, (iii) induced: additional employment created due to increased consumer spending through multiplier effect (due to [i] and [ii]), and (iv) employment (or livelihoods) generated through augmentation of bioresources through restoration (BenDor et al 2015; Edwards et al 2013; Nielsen-Pincus and Moseley 2010). Direct employment is the easiest to estimate and involves deconstructing spending pattern (budgetary allocation) across restoration activities (Edwards et al 2013). Indirect and induced employment involves estimating of employment multipliers from input–output models or computable general equilibrium models (Ding et al 2017; Edwards et al 2013). However, very few studies estimate the employment (or livelihood) potential from local bioresource-based activities (Edwards et al 2013). The next section aims to provide some crude estimates of employment opportunities from ecological restoration in India. With limited data availability,[7] the current estimates are restricted to one-time direct local employment of immediate nature.

The main factors that determine the "potential" local employment opportunities from restoration include the choice of (i) restoration intervention, (ii) restoration activity, (iii) ecosystem type, (iv) extent of degradation, and (v) cost of restoration (Edwards et al 2013; Stanturf et al 2017; Ding et al 2017; Lewis et al 2019). It is also identified that trade-offs may exist between these choices. For instance, promoting interventions like overall agroforestry development can have a higher direct employment potential vis-à-vis intervention, such as natural forestry, which augments carbon store at a higher rate than the former (Lewis et al 2019). Also, a labour-intensive activity like removing invasive species creates more direct employment (with lower skill requirement and hence lower average wages) in comparison to capital-intensive activities like constructing fish passage; but the former in many cases prove to be more costly[8] than the latter (Nielsen-Pincus and Moseley 2010; Stanturf et al 2017). In order to limit such trade-offs and variations (across main factors), we focus on a few universally agreed labour-centric interventions (like reforestation, agroforestry, silvopasture development) that have been found to be common across multiple landscapes and ecosystem types (Ding et al 2017; Edwards et al 2013).

Employment Potential in Restoration: An Estimate

Given (inter- and intra-country) the variations in landscape characteristics and degradation type, utilising employment estimates of interventions directly from global studies for Indian context might be questionable and inaccurate. Instead, this paper adopts an alternate method that involves deconstructing restoration per se into separate components or activities. In the process we identify specific activities based on the nature/characteristics of degraded spaces in India. It is followed by the estimation of direct employments against such activities. The estimates only consider labour days and activities that are undertaken during the period of restoration.[9] The focus is purely on the supply of jobs across degraded spaces, whereas the actual number might vary based on allocated budget and/or economic viability.

While multiple sources like Restoration Opportunities Atlas (Chaturvedi et al 2018), Desertification and Land Degradation Atlas of India (Space Applications Centre–Indian Space Research Organisation 2016) provide estimates of degraded spaces, the Wasteland Atlas of India (Department of Land Resources 2019) (henceforth Atlas) provides the most recent and official data on degraded spaces. However, it is important to mention that the definition of the term "wasteland" employed by the Atlas is based on an outdated colonial classification that focuses merely on economic returns while completely discounting ecological and other non-monetary values. For instance, categories like waterlogged land, ravinous land and glacial land from the Atlas actually provide multiple services to augment biodiversity, regulate water flow and sequester carbon. In consideration with this, only a subset of categories (9 of 23) that indicate degraded spaces by definition have been considered.

For identification of intervention, the specific nature/characteristics of these nine degraded spaces have been reviewed. This is because, historically, with the aim to make land more productive, interventions have promoted conversion of degraded grasslands (one of the nine categories) into forest/plantation ecosystems. This has reduced the area and ecological functions from grassland ecosystem (Gidwani 1992; Tian et al 2014). In this paper, instead of the so-called productive interventions, ecologically accepted practices to improve the condition of (degraded) grasslands like silvopasture intervention have been prescribed for restoration. Such nuanced considerations have been followed in all the other categories of degraded spaces as well.

This is followed by identification of common restoration activities that are not specific to or dependent on ecosystem type and extent of degradation from available local and global studies (Ministry of Water and Environment 2016; Paudyal et al 2017; Stanturf et al 2017). For instance, land with dense scrub can be restored to silvopasture lands by undertaking common activities like (i) removal of alien species, (ii) site preparation, (iii) tree seedling transplanting, and (iv) planting fodder shrubs.

The next step involves identifying labour requirement per hectare across each activity. With limited data availability on these variables from Indian or South Asian context, data from similar developing countries like Kenya, Tanzania and Zambia practising labour-intensive agriculture like India have been considered (Franzel 2005; Laborde 2018; United Nations 2015). To ensure consistency, labour days per hectare across activities were selected from one specific intervention[10] (agroforestry-based interventions in this case). Some of these estimates (two out of six) for which corresponding Indian figures were

available, indicated a variation of less than two labour days per hectare (Babu et al 2009, 2017; Baliyan and Kumar 2014).[11]

Such back-of-the-envelope benefit-transfer method is only aimed at providing an indicative estimate of labour days per activity or intervention (collection of activities) for degraded spaces in India as shown in Table 1.

While the actual interventions and activities will be dependent on the cost of restoration and state-specific characteristics, the estimates indicate a high employment potential from restoration activities. The demand for labour per unit of land, in labour days per hectare ranges from 28.8 for mining wastelands to 50.8 for degraded and abandoned shifting cultivation land. In terms of the total land available, the highest potential employment opportunity in such restoration activities is approximately 1,058 million labour days.[12] With the goal to provide 200 days per person under the new Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) reforms (Meghana and Ramesh 2020), ecological restoration-based activity can potentially employ about 5.2 million people towards an inclusive economic recovery. A substantial component of the employment generated through restoration would continue over several years and would include maintenance, protection, and management of the restored land. As indicated by studies in South Africa, investment in restoration for the recovery of biodiversity could additionally provide five time the employment in ancillary sectors, with income and livelihood benefits through availability of bioresources (Driver and Mukhadi 2019). However, lack of data in India prevents making such estimates on the long-term employment potential at this stage. Nonetheless, it is a long-held view from the ground (Oza 2012) that programmes like MGNREGA can be customised for the poor, not only for employment, production and income generation, but also for restoring their pride.

The finances required for sustaining such schemes would include several factors, depending on the nature and duration of the activity. At the least, labour cost alone could be estimated at the minimum rate of wages. The minimum wage for unskilled workers employed in the agriculture sector in rural areas is ₹362 per day which can give a crude estimation of labour costs in each restoration intervention.[13] As a first estimate, the investment will be ₹38,300 crore, which is within the rural relief package announced by the GoI to recover the economy from COVID-19 slump.[14]

Co-benefits of Restoration

In the COP14, India has pledged to restore 26 million hectares of land by 2030.[15] This target is lower than the 29 odd million hectares land available for restoration as per Table 1. Therefore, the target is potentially within the reach, provided clear action plans, sound strategies and financial outlays are designed and followed up by a strong-willed execution plan. However, while prioritising sites, adequate precautionary steps would be required while restoring sensitive ecosystems, such as open natural habitats (grasslands, savannas, etc), wetlands and riparian habitats, such as not replacing native species with exotic ones or leaving alone sites with potential for natural restoration.[16]

Apart from the huge employment potential, restoring 350 million hectares of only degraded forestlands globally could create $2–$9 trillion as net benefits over a 50-year period (or approximately $170 billion per year) when accounted for the value of public benefits alone (Ding et al 2017). Well-designed and planned restoration projects can also boost landscape productivity,

Table 1: Estimate of Labour Days Potential from Landscape Restoration in India

No	Degraded Spaces [A]	Area (in million hectare) [B]	Main States [C]	Restoration Intervention [D]	Restoration Activity [E]	Labour Days Per Hectare [F]	Number of Labour Days (in million) [G]
1	Land with dense scrub	7.40	Maharashtra (14%); Rajasthan (23%); Gujarat (12%)	Silvopasture	I, II, VI	37.7	279
2	Land with open scrub	9.96	Madhya Pradesh (14%); Maharashtra (12%); Rajasthan (17%)	Silvopasture	I, II, VI	37.7	375.5
3	Shifting cultivation–current jhum	0.39	Nagaland (25%); Odisha (22%); Mizoram (18%)	Agroforestry	II, III, IV, V	34.8	13.6
4	Shifting cultivation–abandoned jhum	0.46	Mizoram (22%); Arunachal Pradesh (26%); Odisha (18%)	Afforestation, Improved Fallow	I, II, III, IV, V	50.8	23.4
5	Underutilised/degraded forest (scrub dominated)	8.64	Madhya Pradesh (15%); Rajasthan (12%); Maharashtra (11%)	Reforestatio, Agroforestry	I, III, VI	30.1	260
6	Underutilised/degraded forest (agriculture)	2.17	Jammu and Kashmir (14%); Madhya Pradesh (16%); Telangana (14%)	Agroforestry, Improved fallows	I, III, IV, VI	34.5	74.9
7	Degraded pastures/grazing land	0.65	Uttarakhand (10%); Himachal Pradesh (10%); Rajasthan (49%)	Silvopasture	I, II, VI	37.7	24.5
8	Degraded land under plantation crop	0.035	Gujarat (24%); Haryana (14%); Jammu and Kashmir (16%)	Agroforestry, Silvopasture	I, IV, V	29.1	1
9	Mining wastelands	0.23	Karnataka (18%); Madhya Pradesh (16%); Tamil Nadu (14%)	Afforestation Rehabilitation	II, III, VI	28.8	6.6

[A] Categories of degraded spaces (categories, from here on) in India as per "Wasteland Atlas of India" (Department of Land Resources–Government of India 2019).
[B] Area under the different categories for 2015–16 as per "Wasteland Atlas of India" (Department of Land Resources–Government of India 2019).
[C] Top three states for each category; Value in '( )' indicates the percentage share of area in the corresponding state against each category for 2015–16 as per "Wasteland Atlas of India" (Department of Land Resources–Government of India 2019).
[D] Potential intervention that can be performed in each category as per Ministry of Water and Environment–Uganda (2016); Paudyal et al (2017); Stanturf et al (2017).
[E] The list of activities under each intervention (details of activities are mentioned in Annexure 1B) as per Ministry of Water and Environment–Uganda (2016); Paudyal et al (2017); Stanturf et al (2017).
[F] Labour days per hectareduring the restoration phase across interventions, or, summation of labour days per hectare against all interventions (details of labour days per hectare are mentioned in Annexure 1B).
[G] Conservative estimate of total number of labour days through restoration across each degraded by multiplying [B] and [F].

improving food and water security (Groot et al 2013), and improve climate change resilience by facilitating carbon sequestration (von Holle et al 2020).

Ecological restoration of natural landscapes and watersheds can help restore ecological processes, such as pollination, a critical service for food production apart from enriching and augmenting biodiversity. A richer biodiversity, containing insectivore birds and bats, for example, may control invertebrate pests, thereby providing pest control services. In addition, restoration-aided biodiversity enrichment may improve the prospects of the bioeconomy by increasing the yield and availability of bioresources (Groot et al 2013).

In this paper, we used the COVID-19 lockdown, the massive loss of employment and large-scale reverse migration from cities to the hinterland as an entry to interrogate the already economically distressed rural India's lack of employment opportunities except low-profit or loss-making farming, usually carried out in very small landholdings. Following that, we explored the employment potential based on data of restoration opportunity available in the public domain. Our initial analysis suggests the initiation of large-scale restoration-based activities in the areas identified as degraded lands, which would not only generate large scale employment benefits, but would also improve the biodiversity and help India reach its global targets, such as the Bonn Challenge 2030 and India's pledge to restore 26 million ha degraded land by 2030. Beyond providing economic opportunities for the distressed migrants with their own rural landscapes, our proposed restoration framework also offers ecological and social co-benefits, such as augmenting biodiversity, improving quality of rural environment and restoring dignity.

NOTES

1 John Hopkins University Coronavirus Resource Center, https://coronavirus.jhu.edu/map.html; data retrieved on 12 November 2020.

2 The UniCredit Economics Chartbook Quarterly, Macro Research (UniCredit Research 2020); https://go.nature.com/2UoUYWK.

3 The Integrated Food Security Phase Classification (IPC) is the international standard for classifying food insecurity and malnutrition. Phase 3 represents a crisis state of food insecurity, http://www.ipcinfo.org/.

4 Vyas (2000) does not distinguish between formal, informal and seasonal employment.

5 See Annexure 1A for disaggregated details.

6 Agricultural land (sq km)—India Food and Agriculture Organization, https://data.worldbank.org/indicator/AG.LND.AGRI.K2?end=2016&locations=IN&start=1961&view=chart.

7 Unlike countries, such as the US, there is limited to no input–output data for the restoration activities in India. The higher share of informal sector and the seasonal nature of employment might be reasons for their unavailability.

8 However, natural regeneration is considered as one of the most cost-effective restoration interventions for forest ecosystem, as labour seems to be the largest cost across all activities (Forest Landscape Restoration Opportunity Assessment for Uganda 2016).

9 While monitoring and maintenance is an important activity in restoration intervention creating significant employment, it has not been considered due to limited information and its dependence on project timeline, local property rights regime.

10 As noted earlier, "labour hours per activity" varies based on the choice of intervention, but with limited data availability across interventions, only one intervention has been considered.

11 Refer to Annexure 1B for details.

12 Summation of labour days employed in restoration activities across degraded spaces and extrapolated for the total area available (estimated in Column G of Table 1).

13 However, due to huge variation of minimum wages across sectors depending on the skill of the workers and geographical location, such estimation has been avoided, https://factly.in/explainer-the-complexity-around-minimum-wage-rates/.

14 The budget for the MGNREGA would be raised by ₹40,000 crore over and above the 2020–21 budget allocation of ₹61,500 crore (Palepu 2020).

15 Prime Minister Narendra Modi made the announcement on 9 September 2019, when he opened the ministerial segment of the 14th session of the Conference of the Parties (CoP) to the United Nations Convention to Combat Desertification in New Delhi, https://www.unccd.int/news-events/world-leaders-call-global-action-restore-degraded-land.

16 Therefore, the area available for restoration might reduce if we take open natural habitats into consideration.

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Annexure IA: Overview of Employment in India Pre- and Post-COVID-19

	Unemployment Rate (UNR)	Labour Participation Rate (LPR)	Employment Rate	Reason for Increased LPR/ Decreased UNR
March 2020	8.8%	41.9%	38.2%	
April 2020	23.5%	35.6%	27.2%	
May 2020	23.5%	38.2	29.2%	56% increase in year-on-year comparison of MGNREGS person-days.The 8-core index reversed from its sharp fall in April with a 30% increase in May over April
June 2020	11%	40.3	–	Doubling of MGNERGS employment and kharif sowing compared to previous year
July 2020	7.4%	40.7%	–	

Source: Vyas (2020).

Annexure 1B: Restoration Activities and Their Labour Requirement

No	Restoration Activity [A]	Labour Days Per Hectare [B]	Verification, if any [C]
I	Removal of invasive species	16	16.6–25 days/ha [a]
II	Site preparation	14.6	14 in the case of agriculture land preparation in Bihar [b]
III	Tree planting/seedling transplanting	7.1	–
IV	Interplanting	4.3	–
V	Pruning	8.8	–
VI	Fodder shrubs planting	7.1*	–

[A List of activities considered using Franzel (2005).
[B] Respective labour days per hectare taken from Franzel (2005).
[C] Labour day per hectare estimates in Indian context.
[a] Estimated using cost data from Babu et al (2009).
[b] Agriculture land preparation estimate taken from Baliyan and Kumar (2014).
* Assumed to be same as tree seed planting (III).

Developing Electronic Peoples' Biodiversity Registers

People's Participation, Credible Documentation and Informed Decisions

VISHWAS CHAVAN, VINOD MATHUR

Wide participation at the grassroots is an important prerequisite for effective documentation, management and monitoring of biological resources. India has long recognised the need for the documentation of biodiversity and associated knowledge. Yet, the progress made through peoples' biodiversity registers has been inadequate. It calls for a systemic intervention as envisaged in the NISARG Bharat (National Initiative for Sustained Assessment of Resource Governance) programme, which is the focus of the paper. It seeks to establish a national framework for electronic PBRs to simplify the process to ensure the participation of both experts and citizens. Anticipated outcomes include comprehensive documentation and accurate assessments of biodiversity and associated knowledge, informed decision-making about biodiversity conservation and bio-resource utilisation, and strengthened national bio-economies.

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India has recognised the significance of documenting biological diversity using a range of approaches. The Biological Diversity Act, 2002 contains one such approach. Its Section 41(1) mandates the development of peoples' biodiversity registers (PBRs) at the local level to document and safeguard bio-resources and associated knowledge (GoI 2003; Gadgil 2003):

> Every local body shall constitute a Biodiversity Management Committee within its area for the purpose of promoting conservation, sustainable use and *documentation of biological diversity* including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and *chronicling of knowledge* relating to biological diversity. (emphasis added)

The mandate of biodiversity management committees (BMCs) includes preparation of PBRs towards documentation and chronicling of such knowledge with the participation of people.

Peoples' Biodiversity Registers: A Chronology

In 1995, Bengaluru-based Foundation for Revitalization of Local Health Traditions (FRLHT) put in practice the concept of PBRs to record the rapidly eroding folk knowledge of medicinal uses of plants (Gadgil 1996). Navdanya, New Delhi and Deccan Development Society, Hyderabad followed this through recording the occurrence and management practices of landraces of cultivated crops. In 1998–99, Kerala Sasthra Sahithya Parishad prepared PBRs covering 85 gram panchayats of Ernakulam district (Ernakulam District Biodiversity Committee 1999). This motivated M S Swaminathan Foundation, Chennai, Paschim Bangal Vigyan Manch, and Society for Environment and Development, Kolkata to develop PBRs for Kerala and West Bengal. Following the enactment of the Biological Diversity Act, 2002, the Madhya Pradesh State Biodiversity Board started the creation of PBRs for its eco-regions (Gadgil et al 2006). However, the network coordinated by the Indian Institute of Science as part of the Biodiversity Conservation Prioritisation Programme sponsored by the World Wildlife Fund, India has been credited for the most systematic attempt in this direction, covering 52 sites in seven states and union territories (UTs) (Gadgil et al 2000a, 2000b).

Over the years, significant investments have been made towards the preparation of PBRs by the National Biodiversity Authority (NBA), United Nations Environment Programme–Global Environment Facility–Access and Benefit Sharing project and other sources at the state and national levels. According to our

estimates, since 2003, the NBA has disbursed over ₹22 crore to states and UTs across the nation for preparation of PBRs. In addition, several state governments such as Kerala have invested their own financial resources towards this.

However, overall progress at the national level in terms of establishment of the BMCs and preparation of the PBRs has been inadequate. Recognising this, the National Green Tribunal (NGT), in its order dated 9 August 2019 in the case of *Chandrabhal Singh v Union of India and Others,* directed all states and UTs to ensure 100% constitution of BMCs and preparation of PBRs by 31 January 2020. In response to this order, as on 31 October 2020, across the nation, 2,67,193 BMCs have been constituted and 2,14,521 PBRs have been prepared by the respective state biodiversity boards (SSBs) and the UT biodiversity councils (National Biodiversity Authority 2020a).

However, progress has been uneven. For instance, in Maharashtra, 100% BMCs (28,649) have been formed, and 99.85% of these BMCs have prepared 28,607 PBRs (Maharashtra State Biodiversity Board 2020). This is not the case for many states and UTs. This unevenness warrants efforts to ensure adherence to the NGT order in both letter and spirit.

It may be noted that the NGT judgment has emphasised that PBR is a dynamic document, and it has to capture all the biological resources available within the jurisdictions of a local body in all the four seasons. Thus, it is not a one-time exercise, but something that is expected to continue in the foreseeable future. Therefore, continuing to work through manual PBRs as it is at present will simply defeat the meaning and intent of the word "dynamic."

All this gives an opportunity to adopt innovative mechanisms to ensure that quality PBRs are created by all BMCs, which will help in meeting the objectives captured in the Biological Diversity Act, 2002. We propose one such avenue in this paper.

Electronic Peoples' Biodiversity Register: Why?

Existing manual PBR processes and output (that is, PBR itself) pose immense challenges for the usability of data captured by it, in particular for development-inclusive conservation processes. More specifically, PBR processes at present lack (i) uniformity in the entire life cycle, from data collection to data dissemination, (ii) ease of operations, (iii) unique identifiers for various components, (iv) data security, (v) wide participation, and even (vi) recognition across the society. Further, there exists more than 32 data templates, without a "directory service" or data documentation guidelines. Moreover, the existing processes do not address the diversity of languages, people or operating methods.

In short, as of date, there is practically no control over the quality of PBR-mobilised data. Periodic review and revision of PBR formats involves significant costs—both financial and transactional—as long as the physical form is retained. This warrants changes in ways in which PBR data are currently being generated, collected, collated, stored, accessed and used. The developments in the past two decades in information and communication technology (ICT), associated infrastructure development and ease of use of such ICT tools and techniques by people at large, throughout India, can be employed for this purpose.

There have been some sporadic efforts in this direction, that is, to develop PBRs using modern tools of databasing and networking. We shall refer to them as electronic PBRs or e-PBRs (Gadgil 2006; National Biodiversity Authority 2020b). Kerala and Goa have been the front runners in this regard. The endeavour by the Goa SBB consists of a web-enabled workflow-based system which facilitates citizens to collect and submit data towards generation of e-PBRs. Similarly, Kerala SBB in collaboration with the National Informatics Centre (NIC) has digitised their PBRs. Assam SBB has used the electronic platform developed by the India Biodiversity Portal to collect, collate and disseminate data under the "Assam Biodiversity Portal."[1] Similarly, Phalee village in Ukhrul, Manipur too has used a web-based platform to publish its species occurrence data under "Rainforest Biodiversity of Phalee."[2]

However, these efforts have lacked a thorough vetting and validation process. These systems, applications and resultant databases and/or data sets therefore need to be reviewed, re-engineered if required and then upscaled for use at the national level. Further, there is an apparent misconception that preparing a PBR or its electronic variant (e-PBR) involves understanding of scientific and technical aspects. This understanding may have been responsible for preventing widespread participation of people from different walks of life. Additional challenges associated with the existing PBR processes, in our experience owe to educational backgrounds and economic hardships and even to cultural, social and psychological spheres, at times connected with lifestyles, attitudes towards coexistence, questions of ownership of bio-resources, and inter- and intra-community politics. These affect the resultant outputs and outcomes. These must be addressed in a holistic and harmonious manner for the PBRs to yield the anticipated outcomes.

NISARG Bharat (National Initiative for Sustained Assessment of Resource Governance), one of the key components of the National Mission on Biodiversity and Human Well-being, currently under consideration by the Prime Minister's Science, Technology, Innovation Advisory Council (PM-STIAC), addresses some of the matters mentioned above. We turn to it next.

National Framework for e-PBRs

NISARG Bharat aims to establish a national framework for e-PBRs that will simplify the process, encouraging participation of experts and citizens alike. The vision is to

> establish a national framework for e-PBRs that is easy-to-function, breaking language barriers in collecting and publishing primary and secondary data about biodiversity and its habitat through participation of people from all walks of life and that facilitates as baseline to prepare PBRs by BMCs for informed decision and better management of their ecosystem and its bioresources. (GOI 2019: 262)

The NBA organised a series of local- to national-level community and stakeholder consultations to arrive at the key characteristics of the national framework for e-PBRs.[3] The process involved over a hundred experts and stakeholders

with experience in various aspects of PBR processes and their intended uses.

Achieving the Objectives of the National Framework for e-PBRs

The national framework for e-PBRs has five distinct objectives. The first three deal with the technical and data-related aspects, while the last two cover content mobilisation, quality enhancements and use of data. Table 1 connects these objectives with products, services and events through which they are expected to be achieved. Given the scope, magnitude, complexity and variability of this endeavour, six distinct work programmes have been conceptualised through which it will be implemented. They are: (i) data access and dissemination, (ii) data quality, standards and protocols, (iii) data use and applications, (iv) capacity building, outreach, collaborations and branding, (v) information infrastructure, and (vi) network management and governance (National Biodiversity Authority 2020b). It follows that the common thread, namely the data architecture, has to be developed accordingly.

Data Architecture of the National Framework for e-PBRs

Data architecture will be developed keeping in view the scope, magnitude, complexity, scalability, variability as well as its susceptibility to unknown and unanticipated incidences. Three specific realms have been considered: (i) design to delivery, (ii) data to services, and (iii) innovative approaches and technical pursuits realm (National Biodiversity Authority 2020b). Needless to say, a data enterprise of this nature has to be easy to function. This will be achieved through a cloud-based distributed network, wherein citizens and those who are interested in biodiversity conservation are able to contribute irrespective of their academic or scientific expertise and command over languages. Data will be digitised at or close to the source, through use of mobile data acquisition and collection tools (mobile handsets, tablets and laptops). In short, schematics will be designed on the principles of "scalable agile" practice, as defined during the consultations.

Data ingestion mobile apps and web-based desktop interfaces will be prepared in all 22 Indian languages (Figure 1, p 58). The data collector at the BMC or the village level (that is, data publisher) will collect data either in the local language or in English through ingestion templates, upload of photos, audio, video using mobile tools. Such data will be stored in a centralised cloud space in various language barrels. Audio and video files will be transcribed using automatic speech recognition (ASR) service into text, and the data curating modules will convert the transcribed data into data tables. All multilingual data will be translated into English and stored into pre-curation barrel. Once the data is processed through appropriate processes, checks, validation and authentication treatments, the curated data will be translated into 22 Indian languages using machine translation (MT) and stored in respective language barrels. This data then will be made available for discovery and access.

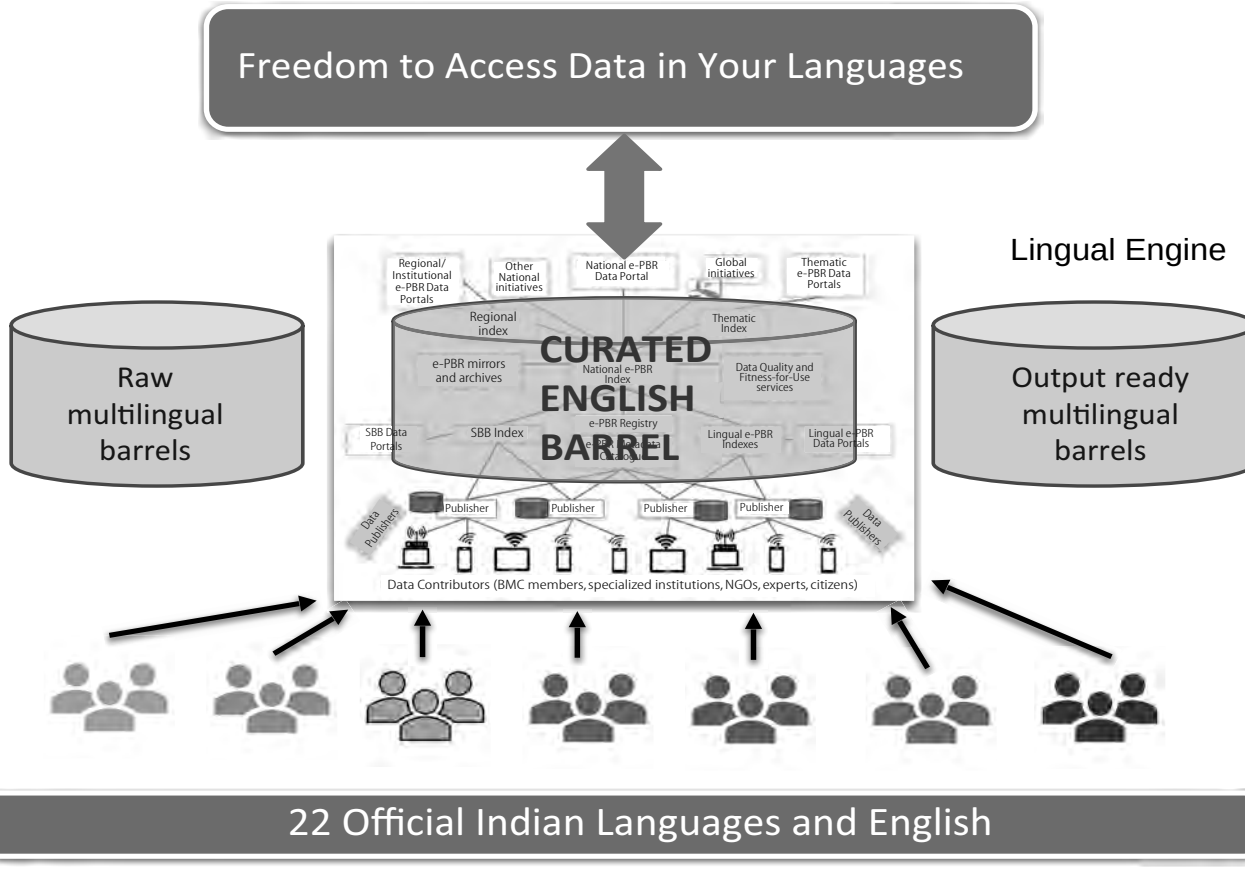
Table 1: National Framework for e-PBRs: Objectives, Products and Services

S No	Objective(s)	Products, Services and Events with Brief Descriptions

1	Development of cloud embraced distributed national infrastructure for electronic Peoples' Biodiversity Registers (e-PBRs)	• Develop online infrastructure for management, and publishing of multilingual PBR data,
		• Use web-based and mobile apps for data collection,
		  • data standards, processes and tools,
		  • modules for digitising legacy data,
		• Collect and disseminate data in English and 22 official Indian languages,
		• Build a national portal for discovery of PBR data sources and metadata-based discovery,
		• Use generic tools for exploring, visualisation, validation, quality and fitness-for-use of the data, and
		• Provide services to other biodiversity data platforms nationally and globally.

2	Development of "National Registry of Names of Organisms" and "National Taxonomic Tree of Life" and related information infrastructure	• Generalise backbone database of current and authenticated occurrences of species to village and/or panchayat levels, • Offer interoperability services with other national and global taxonomic information platforms, namely ZooBank, Catalogue of Life+, etc, and • Have portal to register new species discovery from Indian subcontinent with persistent identifier allocation as being practiced internationally; for example, Zoobank.
3	Develop and deploy mechanisms to recognise people's involvement in data collection, quality enhancement processes and publishing	• Assign persistent identifiers (such as Globally Unique Identifiers, Life Science Identifiers and/or Digital Object Identifier) to people, data sets, species names, taxonomic hierarchies, data objects, species occurrences and events, data versioning and revisioning and data objects such as audio, video, pictures, etc), • Develop national biodiversity data registry, data papers, cited data and national e-PBR index.
4	Development of the "National e-PBR Capacity Building Platform"	• Ensure that e-PBR becomes the routine and day-to-day activity ensuring seamless creation, updating and publishing of e-PBRs and their use in informed decision-making processes. • Use best practice guides and tutorials, • Conduct train-the-trainer programmes, and stakeholder skills enhancement activities.
5	Design and implement state-of-the-art outreach and branding activities	• Ensure that India is seen as pioneer in the area of biodiversity conservation through people's participation in PBR processes. • Develop promotional materials by employing traditional and innovative approaches across all platforms of communication in each of the Indian languages, • Observe "National e-PBR month" with targeted activities with aim to increase people's participation in e-PBR processes, • Establish "National e-PBR award" to recognise the efforts of individuals, institutions, SBBs and BMCs that excel in creation of PBR through use of innovative processes, and organise "National e-PBR Jamboree" where variety of stakeholders from all walks of life, who have participated and/or wishing to participate in e-PBR process can exchange/share their experiences and knowledge.

Figure 1: Multilingual Features of the National Framework for e-PBRs



The programme intends to employ four technical features with multiple benefits: (i) persistent identifiers (cryer et al 2009);[4] (ii) national registry of names of organisms and national species registration service; (iii) national taxonomic tree of life;[5] (iv) data papers (Chavan and Penev 2011), data citation (Chavan and Ingwersen 2009), National Biodiversity Data Registry and National e-PBR Index. The last feature will serve as recognition/incentive mechanisms to facilitate formal recognition to every individual involved from data collection to publishing cycle. More specifically, the National e-PBR Index will help assess the progress of BMCs and SBBs in developing PBRs for their respective jurisdictions.

Admittedly, each individual component of all the architectural perimeters needs to be defined, scoped and placed into a comprehensive scheme along with an implementable action plan. In short, the above description may be considered as a work in progress. Several consultations are being held with experts to decide upon the network schematics on a regular basis. Two important challenges include conversion of the existing PBR modules into the national framework and understanding the users and their uses.

Analogue to Network Transcendence of the PBRs

The NBA (2013) provides 32 templates for collating PBR data. These templates were developed in consideration with the manual PBR processes. In fact, it was thought to be a one-time exercise, as against the "dynamic" one as envisaged by the NGT order. We have conducted an exercise of reviewing existing templates and condensed them into five modules: (i) general information of the BMC, (ii) geo-scape of the BMC, (iii) biodiversity observations, (iv) associated knowledge and (v) access benefit sharing and economics. The first three are exclusively for the use by BMC members and/or BMC-contracted agency and/or technical support group. The other two will be for web-based data ingestion modules and mobile app modules for use by citizens. The data contributed by non-experts will be integrated after due review, scrutiny by the group of pre-identified experts.

Understanding the requirements of a variety of stakeholders from different walks of life, irrespective of their educational qualification and social standings, is one of the most critical aspect that would influence the success of this national framework of e-PBRs. Similarly, different biogeographic zones (for instance, marine, estuarine delta) may call for scalable modification in the data templates. This may even require establishing thematic BMCs catering to these specialised ecosystems. It is our intent to continue to understand these multivaried requirements and implement them in a scalable manner.

Anticipated Benefits and Potential Challenges

We foresee that the national framework for e-PBRs will have wide-ranging uses, impacts and beneficiaries. First and foremost, any citizen interested in assessing the state of biodiversity

is a potential user of the data collated through this initiative. Specific user groups include development planners, policymakers, politicians, administrators, research and academic agencies, resource managers, scientists and para-scientists. Some of these benefits include: (i) increased awareness about local biodiversity and bio-resources; (ii) sustainable use of bio-resources and protection of threatened taxa and ecosystems; (iii) effective planning and management of our landscapes, geo-scapes and bio-scapes; (iv) increased sensitisation through education, research and nature affectionateness; and (v) demonstration of country's rich natural capital on the international fora.

We anticipate the following outcomes: (i) documentation, access and use of biodiversity data and associated knowledge as a reality and a routine feature of our everyday; (ii) informed decisions on steps towards biodiversity conservation and sustainable use of bio-resources at all levels; (iii) recognition of biodiversity data, information and resultant knowledge as a national heritage; (iv) improved (balanced) use of bio-resources, and measures to ensure optimal revitalisation and resilience of ecosystems due to accessibility to precise, accurate, authentic and qualitative data; and (v) determination of strength of our bio-based economy through assessment of quantum, quality, status of biodiversity and its habitats.

Understanding the risks and triggers for failure of this endeavour is essential. At this stage, we find five such risks: (i) complexity of infrastructure, (ii) hierarchical structure of participation, (iii) lack of participation from grassroots level, (iv) lack of support from policy, politics and economical front, and (v) unnoticeable loss of data and information. We do not see technology as a major challenge or a trigger for failure. To overcome the perceived threats, we intend to adopt six key principles of implementing successful projects, namely (i) built-upon existing investment, (ii) people-driven and nature-driven outputs, (iii) content-driven approach, (iv) ensure ease of use, (v) ensure interoperability, and (vi) use technology that will help in understanding the state of the art in biodiversity through access to data/information and resultant knowledge. It is our conviction that working on the basis of these six principles in both letter and spirit will ensure that all obstacles are addressed.

In Conclusion

In summary, when implemented, a nationwide framework for e-PBRs will be a well-coordinated data enterprise where processes, protocols, mechanisms, standards, and ethics of data collection, collation, and publishing are followed in letter and spirit appreciating the economic and ecological value of such information, perceived threats to threatened or endangered species, and respecting the national laws and policies of data exchange/sharing. Further, this is an opportunity to mainstream biodiversity and ecological sciences, drawing increased attention towards negative impacts of over-exploitation of biotic resources and carelessness towards the very habitats that support our life. If PBR is looked at as a process and opportunity to transform citizens (irrespective of their educational qualifications) from bio-illiteracy to bio-literacy, then devising a well-thought-out and well-coordinated national framework of e-PBRs, as envisaged in this paper, will become a necessity.

NOTES

1 https://assambiodiversity.indiabiodiversity.org/.

2 https://indiabiodiversity.org/group/rainforest_biodiversity_of_phalee/show.

3 The following 18 key characteristics have been arrived at: (i) cloud embraced distributed information infrastructure, (ii) scalable, replicable, parallelism of data flows and processes, (iii) built upon existing investment, (iv) use of state-of-the-art technologies, (v) digitisation and value addition of legacy data, (vi) uniformity in data collection, (vii) digitisation at source, (viii) enhance data completeness, (ix) filling up data gaps, (x) adding new data components, (xi) unique identifiers, (xii) data quality enhancements, (xiii) interoperable and integration with other data types, (xiv) data security and demand driven dissemination, (xv) ease of operations, (xvi) recognition and incentives to stakeholders, (xvii) ensuring growing participation, and (xviii) reduced financial demands (National Biodiversity Authority 2020b).

4 It will be issued to people, data, objects, versions, taxon names, collections, occurrences, products and citations including data papers.

5 It will form the taxonomic backbone of the e-PBRs. Scientific and common names will be curated, validated and authenticated in collaboration with Botanical Survey of India, Zoological Survey of India, National Bureau of Microorganisms, Virus and Fungi, Indian Agricultural Research Institute institutions, etc, together with national and international research institutions.

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Wholesale Price Index

The year-on-year WPI inflation rate stood at 1.5% in October 2020 from 1.3% registered a month ago. The index of primary articles decreased by 4.7% compared to 6.1% reported a year ago and 5.1% a month ago. The index for food articles went down by 6.4% compared to 9.8% recorded a year ago and 8.2% a month ago. The index for fuel and power declined by (-)11.0% against (-)8.1% registered a year ago. With a higher weight of 64.2% in the WPI, the index for manufactured products increased by 2.1% against -0.9% reported a year ago.

Consumer Price Index

The CPI-inflation rate rose to 7.6% in October 2020 from 4.6% registered a year ago and 7.3% a month ago. The consumer food price index increased by 11.1% against 7.9% recorded a year ago and 10.7% a month ago. The CPI-rural inflation rate rose to 7.7% and urban to 7.4% from 4.3% and 5.1%, respectively, reported a year ago. As per Labour Bureau data, the CPI for agricultural labourers (CPI–AL) decreased to 6.6% in October 2020 from 8.1% a year ago and that for industrial workers (CPI–IW) to 5.6% in August 2020 from 6.3%.

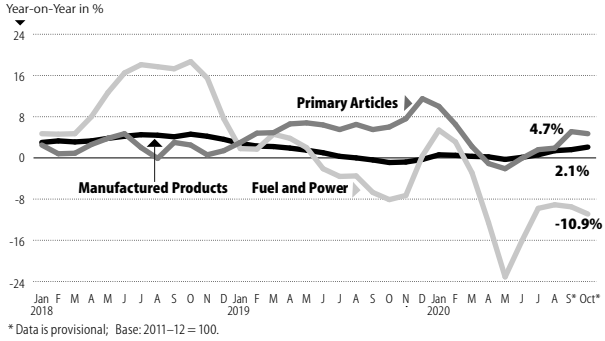
Foreign Trade

The merchandise trade deficit narrowed down to $8.7 bn in October 2020 from $11.8 bn registered a year ago. Exports declined by (-)5.1% to $24.9 bn and imports by (-)11.5% to $33.6 bn from $26.2 bn and $38.0 bn, respectively. Oil imports stood lower at $6.0 bn and non-oil imports at $27.6 bn compared to $9.7 bn and $28.3 bn, respectively. During April–October 2020–21, cumulative exports contracted by (-)19.0% to $150.1 bn and imports by (-)36.3% to $182.3 bn from $185.4 bn and $286.1 bn, respectively, registered in the corresponding period last year.

Index of Eight Core Industries

The index of eight core industries slowed down by (-)2.5% in October 2020 compared to (-)5.5% registered a year ago. The index of petroleum refinery products declined by (-)17.0%, crude oil by (-)6.2% and natural gas by (-)8.6% against 0.4%, -5.1% and -5.6%, respectively. Growth rate in coal segment increased to 11.6%, electricity generation to 10.5% and cement to 2.8% from their respective growth rates of -17.6%, -12.2%, and -7.7%. Production of steel decreased by (-)2.7% and fertilisers by 6.3% against -0.5% and 11.8% registered a year ago.

Movement of WPI-Inflation Rate January 2018–October 2020



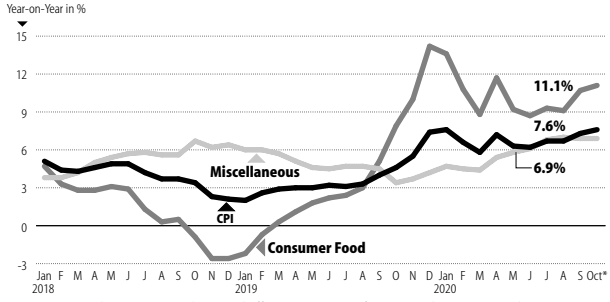
* Data is provisional; Base: 2011–12 = 100.

Trends in WPI and Its Components October 2020* (%)

	Weights	Over Month	Over Year	Financial Year (Averages) 2017–18	2018–19	2019–20
All commodities	100	0.7	1.5	2.9	4.3	1.7
Primary articles	22.6	1.4	4.7	1.4	2.7	6.8
Food articles	15.3	1.4	6.4	2.1	0.3	8.4
Fuel and power	13.2	0.1	-10.9	8.2	11.5	-1.8
Manufactured products	64.2	0.4	2.1	2.7	3.7	0.3

*Data is provisional; Base: 2011–12=100. Source: Ministry of Commerce and Industry.

Movement of CPI Inflation January 2018–October 2020



* Data is provisional. Source: National Statistical Office (NSO), Ministry of Statistics and Programme Implementation, Base: 2012=100.

CPI: Rural and Urban October 2020* (%)

	Latest Month Index	Over Month	Over Year	Financial Year (Avgs) 2018–19	2019–20
CPI combined	158.4	1.3	7.6	3.41	4.25
Rural (2012=100)	159.7	1.4	7.7	2.99	5.39
Urban (2012=100)	156.8	1.0	7.4	3.92	4.78
CPI: Occupation-wise					
Industrial workers (2001=100)#	338	0.60	5.62	5.45	7.53
Agricultural labourers (1986–87=100)	1052	1.45	6.59	2.10	8.00

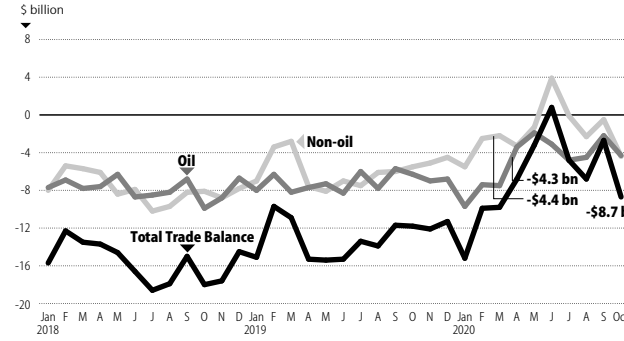
* Provisional; # August 2020. Source: NSO (rural and urban); Labour Bureau (IW and AL).

Merchandise Trade October 2020

	October 2020 ($ bn)	Over Month (%)	Over Year (%)	April–October (2020–21 over 2019–20) (%)
Exports	24.9	-9.8	-5.1	-19.0
Imports	33.6	10.9	-11.5	-36.3
Trade deficit	8.7	219.4	-25.9	-68.1

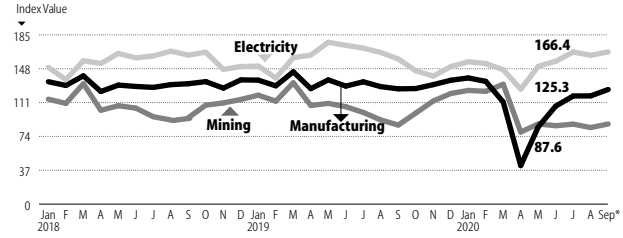
Data is provisional. Source: Ministry of Commerce and Industry.

Trade Balance January 2018–October 2020



Oil refers to crude petroleum and petroleum products, while Non-oil refers to all other commodities.

Movement of Index Values of Components of IIP January 2018–September 2020



* September 2020 are quick estimates; Base: 2011–12=100.

Growth in Eight Core Industries October 2020* (%)

	Weights	Over Month	Over Year	Financial Year (Avgs) 2018–19	2019–20
Infrastructure industries	40.27@	3.0	-2.5	4.4	0.4
Coal	10.3	15.6	11.6	7.4	-0.4
Crude oil	9.0	3.3	-6.2	-4.1	-5.9
Natural gas	6.9	5.4	-8.6	0.8	-5.6
Petroleum refinery products	28.0	4.9	-17.0	3.1	0.2
Fertilisers	2.6	8.2	6.3	0.3	2.7
Steel	17.9	0.3	-2.7	5.1	3.4
Cement	5.4	11.2	2.8	13.3	-0.9
Electricity	19.9	-3.2	10.5	5.2	0.9

(Base: 2011–12=100); *Data is provisional; @The revised Eight Core Industries have a combined weight of 40.27% in the IIP. Source: National Statistical Office and Ministry of Commerce and Industry.

Comprehensive current economic statistics with regular weekly updates are available at: http://www.epwrf.in/currentstat.aspx.

India's Quarterly Estimates of Final Expenditures on GDP

₹ Crore | At 2011–12 Prices	2018–19 Q1	2018–19 Q2	2018–19 Q3	2018–19 Q4	2019–20 Q1	2019–20 Q2	2019–20 Q3	2019–20 Q4	2020–21 Q1	2020–21 Q2
Private final consumption expenditure	1889008 (6.7)	1903853 (8.8)	2046415 (7.0)	2068782 (6.2)	1992967 (5.5)	2025488 (6.4)	2182352 (6.6)	2125099 (2.7)	1461164 (-26.7)	1796290 (-11.3)
Government final consumption expenditure	393709 (8.5)	407780 (10.8)	341988 (7.0)	335089 (14.4)	418249 (6.2)	465643 (14.2)	387729 (13.4)	380747 (13.6)	486636 (16.4)	362368 (-22.2)
Gross fixed capital formation	1082670 (12.9)	1077942 (11.5)	1130201 (11.4)	1170154 (4.4)	1132195 (4.6)	1035736 (-3.9)	1071838 (-5.2)	1094323 (-6.5)	599192 (-47.1)	959628 (-7.3)
Change in stocks	64131 (28.3)	66159 (22.4)	63999 (21.9)	70126 (18.4)	67328 (5.0)	66999 (1.3)	64718 (1.1)	70445 (0.5)	53336 (-20.8)	71208 (6.3)
Valuables	41080 (-34.7)	44629 (-3.6)	39252 (-0.7)	44772 (1.9)	51347 (25.0)	51761 (16.0)	43368 (10.5)	46153 (3.1)	4645 (-91.0)	20995 (-59.4)
Net trade (Export–import)	-122238	-141491	-104580	-51926	-117242	-76355	-44444	-59686	75675	46717
Exports	686695 (9.5)	719352 (12.5)	748505 (15.8)	767991 (11.6)	708546 (3.2)	703282 (-2.2)	703023 (-6.1)	702809 (-8.5)	567961 (-19.8)	692568 (-1.5)
Less imports	808933 (5.9)	860843 (18.7)	853085 (10.0)	819917 (0.8)	825788 (2.1)	779637 (-9.4)	747467 (-12.4)	762495 (-7.0)	492286 (-40.4)	645851 (-17.2)
Discrepancies	10803	73679	-17242	52683	-9576	15062	-62812	146521	8908	56962
Gross domestic product (GDP)	3359162 (7.1)	3432553 (6.2)	3500033 (5.6)	3689678 (5.7)	3535267 (5.2)	3584335 (4.4)	3642748 (4.1)	3803601 (3.1)	2689556 (-23.9)	3314167 (-7.5)

India's Overall Balance of Payments (Net): Quarterly

Item	2019–20 ($ mn) Q1	Q2	Q3	Q4	2020–21 ($ mn) Q1	2019–20 (₹ bn) Q1	Q2	Q3	Q4	2020–21 (₹ bn) Q1
Current account	-15004	-7579	-2630	558	19774	-1044 [-2.1]	-534 [-1.1]	-187 [-0.4]	40 [0.1]	1500 [3.9]
Merchandise	-46774	-39650	-36040	-35042	-10017	-3253	-2793	-2567	-2536	-760
Invisibles	31769	32070	33410	35600	29791	2209	2259	2380	2577	2260
Services	20075	20941	21879	22027	20503	1396	1475	1558	1594	1556
of which: Software services	20998	21064	21455	21125	20773	1460	1484	1528	1529	1576
Transfers	17964	19952	18893	18400	16986	1249	1405	1346	1332	1289
of which: Private	18224	20188	19132	18673	17217	1267	1422	1363	1352	1306
Income	-6270	-8822	-7361	-4827	-7698	-436	-621	-524	-349	-584
Capital account	28624	13580	23626	17350	552	1991 [4.0]	956 [1.9]	1683 [3.3]	1256 [2.4]	42 [0.1]
of which: Foreign investment	18835	9791	17572	-1782	250	1310	690	1252	-129	19
Overall balance	13984	5118	21601	18794	19846	973 [2.0]	360 [0.7]	1539 [3.0]	1360 [2.6]	1506 [4.0]

Figures in square brackets are percentage to GDP.

Foreign Exchange Reserves

Excluding gold but including revaluation effects	27 November 2020	29 November 2019	31 March 2020	Variation Over Month	Variation Over Year	Financial Year So Far 2019–20	Financial Year So Far 2020–21	Financial Year 2015–16	2016–17	2017–18	2018–19	2019–20
₹ crore	3962075	534949	420803	3344616	15128	114147	33989	218620	25300	353270	68050	668976
$ mn	534949	-2343	17651	443645	-34109	83458	441780	16297	10160	53217	-14168	56831

Monetary Aggregates

₹ Crore	Outstanding 2020	Variation Over Month	Variation Over Year	Variation Financial Year So Far 2019–20	Variation Financial Year So Far 2020–21	Financial Year 2017–18	Financial Year 2018–19	Financial Year 2019–20
Money supply (M_3) as on 20 November	17911125	104466 (0.6)	1921521 (12.0)	557537 (3.6)	1111162 (6.6)	1170657 (9.2)	1469480 (10.5)	1367896 (8.9)
Components								
Currency with public	2636629	27458 (1.1)	460458 (21.2)	123961 (6.0)	286881 (12.2)	495583 (39.2)	292497 (16.6)	297538 (14.5)
Demand deposits	1613454	22521 (1.4)	171633 (11.9)	-184691 (-11.4)	-124238 (-7.1)	86962 (6.2)	142800 (9.6)	111180 (6.8)
Time deposits	13619385	55703 (0.4)	1279644 (10.4)	618137 (5.3)	945369 (7.5)	585266 (5.8)	1026348 (9.6)	952412 (8.1)
Other deposits with RBI	41658	-1215 (-2.8)	9786 (30.7)	130 (0.4)	3150 (8.2)	2817 (13.4)	7835 (32.8)	6766 (21.3)
Sources								
Net bank credit to government	5716014	86342 (1.5)	746205 (15.0)	581318 (13.2)	755652 (15.2)	144799 (3.8)	387092 (9.7)	571871 (13.0)
Bank credit to commercial sector	11065229	55831 (0.5)	602040 (5.8)	80470 (0.8)	26584 (0.2)	802225 (9.5)	1169004 (12.7)	655926 (6.3)
Net foreign exchange assets	4447921	173269 (4.1)	1054283 (31.1)	322798 (10.5)	646885 (17.0)	364065 (14.2)	148545 (5.1)	730196 (23.8)
Banking sector's net non-monetary liabilities	3344489	210975 (6.7)	481335 (16.8)	427285 (17.5)	318063 (10.5)	140995 (6.8)	235394 (10.7)	590557 (24.2)
Reserve money as on 27 November	3317074	91291 (2.8)	461970 (16.2)	84623 (3.1)	287367 (9.5)	518300 (27.3)	351701 (14.5)	259226 (9.4)
Components								
Currency in circulation	2770493	55978 (2.1)	503108 (22.2)	130614 (6.1)	323181 (13.2)	494078 (37.0)	307423 (16.8)	310541 (14.5)
Bankers' deposits with RBI	504678	34126 (7.3)	-50730 (-9.1)	-46561 (-7.7)	-39210 (-7.2)	21405 (3.9)	36444 (6.4)	-58081 (-9.6)
Other deposits with RBI	41904	1187 (2.9)	9592 (29.7)	570 (1.8)	3396 (8.8)	2817 (13.4)	7835 (32.8)	6766 (21.3)
Sources								
Net RBI credit to government	1023947	118493 (13.1)	58509 (6.1)	163487 (20.4)	31755 (3.2)	-144836 (-23.3)	325987 (68.5)	190241 (23.7)
of which: Centre	1013258	114224 (12.7)	48376 (5.0)	164409 (20.5)	23517 (2.4)	-145304 (-23.5)	326187 (68.8)	189268 (23.6)
RBI credit to banks & commercial sector	-517594	-102653 (24.7)	-311004 (150.5)	-359441 (-235.2)	-316701 (157.6)	372643 (-120.5)	89478 (0.0)	-353744 (0.0)
Net foreign exchange assets of RBI	4249125	128184 (3.1)	1041900 (32.5)	358638 (12.6)	658722 (18.3)	363571 (15.2)	87806 (3.2)	741816 (26.0)
Govt's currency liabilities to the public	26541	90 (0.3)	418 (1.3)	235 (0.9)	193 (0.7)	572 (2.3)	236 (0.9)	460 (1.8)
Net non-monetary liabilities of RBI	1464944	52823 (3.7)	327853 (28.8)	78296 (7.4)	86602 (6.3)	73650 (8.8)	151805 (16.7)	319547 (30.2)

Scheduled Commercial Banks' Indicators *(₹Crore)*

(As on 20 November)	Outstanding 2020	Variation Over Month	Variation Over Year	Variation Financial Year So Far 2019–20	Variation Financial Year So Far 2020–21	Financial Year 2017–18	Financial Year 2018–19	Financial Year 2019–20
Aggregate deposits	14370700	78076 (0.5)	1412227 (10.9)	384702 (3.1)	803208 (5.9)	668390 (6.2)	1147721 (10.0)	993721 (7.9)
Demand	1511517	6215 (0.4)	179778 (13.5)	-179548 (-11.9)	-105486 (-6.5)	88843 (6.9)	141004 (10.3)	105716 (7.0)
Time	12859183	71861 (0.6)	1232449 (10.6)	564249 (5.1)	908694 (7.6)	579547 (6.1)	1006718 (10.0)	888004 (8.0)
Cash in hand	86579	1711 (2.0)	1595 (1.9)	10107 (13.5)	-682 (-0.8)	-1295 (-2.1)	14812 (24.7)	12384 (16.5)
Balance with RBI	471488	34478 (7.9)	-45974 (-8.9)	-48245 (-8.5)	-64698 (-12.1)	16906 (3.3)	40021 (7.6)	-29521 (-5.2)
Investments	4425325	-16637 (-0.4)	705757 (19.0)	338512 (10.0)	677976 (18.1)	287494 (9.5)	62602 (1.9)	366293 (10.8)
of which: Government securities	4423853	-16498 (-0.4)	707985 (19.1)	336867 (10.0)	685157 (18.3)	287657 (9.5)	61594 (1.9)	359695 (10.6)
Bank credit	10434550	95697 (0.9)	574247 (5.8)	88580 (0.9)	63689 (0.6)	783965 (10.0)	1146298 (13.3)	599138 (6.1)
of which: Non-food credit	10345594	73400 (0.7)	576595 (5.9)	38886 (0.4)	26497 (0.3)	795906 (10.2)	1146677 (13.4)	588984 (6.1)

Capital Markets

	4 December 2020	Month Ago	Year Ago	Financial Year So Far Trough	Financial Year So Far Peak	2019–20 Trough	2019–20 Peak	End of Financial Year 2017–18	2018–19	2019–20
S&P BSE SENSEX (Base: 1978–79=100)	45080 (10.4)	40616	40850 (13.1)	27591	45080	25981	41953	32969 (12.1)	39714.20 (12.4)	29816 (-21.8)
S&P BSE-100 (Base: 1983–84=100)	13387 (10.5)	11986	12115 (8.9)	8180	13387	7683	12456	10503 (11.5)	12044.07 (9.1)	8693 (-25.2)
S&P BSE-200 (1989–90=100)	5622 (11.7)	5016	5034 (8.7)	3416	5622	3209	5185	4433 (12.0)	4986.55 (7.1)	3614 (-25.1)
CNX Nifty-50 (Base: 3 Nov 1995=1000)	13259 (10.1)	11909	12043 (10.8)	8084	13259	7610	12362	10114 (11.1)	11922.80 (11.1)	8660 (-24.3)
CNX Nifty-500	10979 (12.2)	9765	9782 (7.3)	6638	10979	6243	10119	8912 (12.6)	9805.05 (5.3)	7003 (-26.3)

Figures in brackets are percentage variations over the specified or over the comparable period of the previous year. | (-) = not relevant | - = not available | NS = new series | PE = provisional estimates

■ Comprehensive current economic statistics with regular weekly updates are available at: http://www.epwrf.in/currentstat.aspx.

Secondary Market Transactions in Government Securities, Forex Market and Money Market—November 2020

1 Settlement Volume of Government Securities Transactions

Settlement Period	Outright		Repo		Daily Average (Outright)		Daily Average (Repo)	
	Number of Trades	Volume (₹ Cr)	Number of Trades	Volume (₹ Cr)	Number of Trades	Volume (₹ Cr)	Number of Trades	Volume (₹ Cr)
November 2020	47529	727023	24607	3525073	2502	38264	1172	167861
November 2019	63344	862104	18717	2359755	3167	43105	814	102598
2020–21^	441085	7240739	199923	29533482	2723	44696	1117	164992
2019–20^	668492	8982438	155710	17924618	4178	56140	885	101844

2 Netting Factor

a Securities			b Funds		
Gross (₹ Cr)	Net (₹ Cr)	Netting Factor (%)	Gross (₹ Cr)	Net (₹ Cr)	Netting Factor (%)
4252096	1483408	65.11	4457541	531076	88.09
3221858	1085540	66.31	3335359	406429	87.81
36774014	13416874	63.52	38651926	4496936	88.37
26908550	9542085	64.54	27837442	3414273	87.73

3 Instrument-wise Break-up of Securities Transactions (₹ Cr)

a Outright Trades			b Repo		
Central Govt Dated	Treasury Bills	State Govt	Central Govt Dated	Treasury Bills	State Govt
557387	125632	44004	1222247	217550	322849
720276	98450	43377	901134	57715	226624
5518995	1351766	369978	9774759	2159152	2834374
7656948	860720	464769	6110304	1107721	1757154

4 Tenor-wise Settlement Volume of Central Government Dated Securities

Year	November 2020	2020–21^		2019–20^	
2020	4181	43210	(0.78)	191948	(2.51)
2021	6751	110589	(2.00)	82194	(1.08)
2022	15900	200867	(3.64)	148607	(1.95)
2023	14892	142870	(2.59)	240890	(3.15)
2024	35406	449580	(8.15)	873774	(11.44)
2025	66661	374573	(6.79)	51295	(0.67)
2026	14330	296564	(5.37)	412425	(5.40)
2027	16389	176410	(3.20)	81902	(1.07)
2028	10390	127313	(2.31)	1148050	(15.03)
2029	23328	1078245	(19.54)	3840590	(50.30)
2030	205135	1404998	(25.46)	36186	(0.47)
2031	2367	46140	(0.84)	62197	(0.81)
2032	3256	33254	(0.60)	93448	(1.22)
2033	11999	240269	(4.35)	193855	(2.54)
2034	80988	606559	(10.99)	19955	(0.26)
2035	23277	36272	(0.66)	22187	(0.29)
2036	155	3655	(0.07)	2223	(0.03)
2037	137	632	(0.01)	401	(0.01)
2038	137	632	(0.01)	401	(0.01)
2039	452	11433	(0.21)	24068	(0.32)
2040	497	2132	(0.04)	5333	(0.07)
2041	329	2197	(0.04)	8455	(0.11)
2042	398	6266	(0.11)	9190	(0.12)
2043	764	8742	(0.16)	19098	(0.25)
2044	333	3022	(0.05)	9845	(0.13)
2045	488	3150	(0.06)	5905	(0.08)
2046	397	3671	(0.07)	12283	(0.16)
2047	147	642	(0.01)	366	(0.00)
2048	147	642	(0.01)	366	(0.00)
2049	1280	2581	(0.05)	11281	(0.15)
2050	5152	37271	(0.68)	356	(0.00)
2051	287	4873	(0.09)	4660	(0.06)
2052	177	635	(0.01)	356	(0.00)
2053	177	635	(0.01)	356	(0.00)
2054	177	636	(0.01)	356	(0.00)
2055	1002	5466	(0.10)	2178	(0.03)
2056	163	546	(0.01)	342	(0.00)
2057	163	546	(0.01)	343	(0.00)
2058	162	545	(0.01)	343	(0.00)
2059	302	3306	(0.06)	17936	(0.23)
2060	8714	47426	(0.86)	0	(0.00)
Total	557387	5518995	(100)	7635944	(100)

5 Deal Size Analysis (%)

Settlement Period	< 5 Cr		5 Cr		> 5 Cr <= 10 Cr		>10 Cr <= 20 Cr		> 20 Cr	
	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value
November 2020	5.19	0.53	51.12	16.71	19.95	12.92	7.37	8.03	16.38	61.81
November 2019	4.34	0.46	52.92	19.44	21.42	15.66	7.15	9.07	14.18	55.37
2020–21^	4.43	0.45	49.03	14.94	21.07	12.77	7.67	8.00	17.79	63.84
2019–20^	3.15	0.36	53.46	19.89	20.95	15.56	7.85	10.13	14.59	54.06

6 Market Share of Top 'n' Securities (%)

Period	November 2020	November 2019	2020–21^	2019–20^
Top 5	66.10	78.47	56.08	78.91
Top 10	75.37	85.68	73.44	86.47
Top 15	81.99	89.41	81.01	89.41
Top 20	86.53	92.12	84.75	91.48

7 Intercategory Member Turnover Activity for All Category

Category	Buy					Sell				
	Outright	Reverse Repo (Funds Lending)	TREP Lending@	Uncollateralised Money Market Lending*	Forex	Outright	Repo	TREP Borrowing@	Uncollateralised Money Market Borrowing*	Forex
Cooperative Banks	3.19	0.04	0.19	79.16**	0.15	3.05	1.14	0.74	4.62**	0.16
Financial Institutions	1.01	0.77	2.93	-	0.11	0.35	0.11	5.53	-	0.10
Foreign Banks	15.92	39.92	0.80	2.01	42.76	17.72	32.74	5.26	2.26	44.34
Insurance Companies	2.37	1.98	15.55	-	-	1.47	0.00	0.00	-	-
Mutual Funds	21.74	53.06	66.61	-	-	11.07	0.00	0.40	-	-
Others	4.65	0.00	13.47	-	-	3.45	1.45	3.27	-	-
Primary Dealers	8.57	1.44	0.01	0.00	-	14.24	36.90	4.76	64.51	-
Private Sector Banks	27.98	2.53	0.10	6.89	27.92	31.99	16.13	59.21	27.45	28.01
Public Sector Banks	14.58	0.25	0.33	11.94	29.06	16.66	11.53	20.83	1.15	27.38
Total	100.00	100.00	100.00	20.84	100.00	100.00	100.00	100.00	95.38	100.00

8 Market Share of Top Five Members (Category-wise) (%)

Categories	November 2020	November 2019	2020–21^
Cooperative Banks	49.39	61.38	56.07
Foreign Banks	69.46	73.01	68.81
Public Sector Banks	69.13	52.54	66.91
Private Sector Banks	82.73	80.52	81.65
Mutual Funds	59.48	60.34	54.46
Primary Dealers	90.24	89.46	87.42

9 Market Share of Top 'n' Members (%)

Period	November 2020	November 2019	2020–21^	2019–20^
Top 5	29.19	29.59	29.28	28.88
Top 10	42.30	42.63	42.70	43.66
Top 15	52.76	52.32	52.95	54.63
Top 20	61.56	60.42	61.08	63.30

10 Trading Platform Analysis of Outright Trades

Period	OTC				NDS-OM			
	Trades	% Share	Value (₹ Cr)	% Share	Trades	% Share	Value (₹ Cr)	% Share
November 2020	4679	9.79	185151	25.29	43134	90.21	546963	74.71
November 2019	5292	8.39	217595	25.30	57763	91.61	642351	74.70
2020–21^	36978	8.35	1822936	25.23	405618	91.65	5401998	74.77
2019–20^	44943	6.71	1905324	21.17	624438	93.29	7093144	78.83

11 Type-wise Settlement Volume of Government Securities Transactions (₹ Crore)

Period	Outright				Repo			
	Proprietary		Constituent		Proprietary		Constituent	
	Trades	Volume	Trades	Volume	Trades	Volume	Trades	Volume
November 2020	36423	584393	11106	142630	11262	1490746	1071	271901
November 2019	52882	739336	10462	122768	8787	1037625	619	147848
2020–21^	341529	5858408	99556	1382331	90788	11999481	9252	2768806
2019–20^	560768	7520821	107724	1461616	74390	8196022	3528	779159

12 Trep Trading @

Settlement Period	Total		Daily Average	
	Trades	Value	Trades	Value
November 2020	18731	4453008	892	212048
November 2019	18677	3647186	812	158573
2020–21^	147772	31845448	826	177908
2019–20^	140477	24295698	798	138044

13 Top 5 Securities—Basket Repo

Security	Trades	Value	Rate
FRB 2031	146	70536	2.87
7.26% GS 2029	162	49489	2.86
7.32% GS 2024	113	48516	2.84
6.79% GS 2029	131	47483	2.87
5.22% GS 2025	118	42063	2.92

14 Top 5 Securities—Special Repo

Security	Trades	Value	Rate
5.77% GS 2030	490	60281	2.76
6.19% GS 2034	478	52609	2.69
5.22% GS 2025	330	33920	2.81
FRB 2031	90	25480	2.89
5.79% GS 2030	231	24405	2.77

15 Forex Settlement

Settlement Period	Cash			Tom			Spot			Forward			Total			Average			Netting Factor: Forex		
	Trades	Value		Trades	Value		Trades	Value		Trades	Value		Trades	Value		Trades	Value		Gross	Net	Netting
		(₹ Cr)	($ Mn)		(₹ Cr)	($ Mn)		(₹ Cr)	($ Mn)		(₹ Cr)	($ Mn)		(₹ Cr)	($ Mn)		(₹ Cr)	($ Mn)	($ Mn)	($ Mn)	Factor (%)
November 2020	2225	476703	64249	2778	521320	70192	152827	1998336	269202	5800	629490	84242	163630	3625849	487885	9625	213285	28699	487885	23539	95.18
2020–21^	21324	4846687	648643	27637	5839694	780915	869877	12622015	1691199	53484	5909906	794976	972322	29218303	3915733	6115	183763	24627	3915733	205219	94.76

16 Category-wise Forex Activity—Deal Type

Category	Cash	Tom	Spot	Forward
Foreign Banks	42.44	51.29	39.66	50.39
Public Sector Banks	23.74	13.40	34.20	24.88
Private Sector Banks	33.46	35.21	25.89	24.39
Cooperative Banks	0.07	0.06	0.22	0.09
Financial Institutions	0.29	0.05	0.03	0.24

17 Forex Deal Size Analysis (%)

Settlement Period	< 1 mn		1 mn		> 1 mn <= 5 mn		> 5 mn <= 10 mn		> 10 mn <= 20 mn		> 20 mn	
	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value
November 2020	20.02	2.58	61.99	20.79	10.72	11.36	2.83	9.01	1.44	8.31	3.01	47.94
2020–21^	20.74	1.99	56.12	13.94	12.99	10.34	3.66	8.68	1.99	8.45	4.52	56.60

18 Market Share—Forex (%)

Period	November 2020	November 2019	2020–21^	2019–20^
Top 5	31.79	29.83	33.42	30.77
Top 10	54.71	54.45	57.08	52.00
Top 15	71.40	70.75	75.02	67.93
Top 20	82.68	81.42	84.83	79.55

19 Tenor-wise Forward Trade Analysis (%)

Settlement Period	< 30 Days		> 30 Days & <= 90 Days		> 90 Days & <= 180 Days		> 180 Days & <= 365 Days		> 1 Year	
	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value	% to Total Trades	% to Total Value
November 2020	15.57	24.33	14.45	19.01	13.81	15.40	51.43	38.43	4.74	2.83
November 2019	13.29	17.81	29.30	37.42	14.70	11.58	36.68	29.49	6.04	3.70
2020–21^	12.70	23.98	18.04	23.10	15.48	16.05	48.54	33.27	5.25	3.61

20 Forex Trading Platform: FX Clear (Amount in $)

Period	Spot		Daily Average	
	Trades	Value	Trades	Value
November 2020	23118	12934	1217	681
November 2019	36731	22698	1933	1195
2020–21^	128164	72005	791	444
2019–20^	261271	165776	1112	705

^ data pertains to April–November; *Call and Term Money Segment; ** Includes Small Finance and Payment Banks; @ 5 November 2018 onwards; (i) Figures in brackets are percentage to total; (ii) Tables 1 to 11 relate to Government Securities Market; (iii) Tables 12 to 14 relate to Money Market; and (iv) Tables 15 to 20 relate to Forex Market. Source: Clearing Corporation of India Limited (CCIL).

Dalit Narrative and Dalit Representation in Indian Cinema

While Hollywood has begun making some amends for the poor representation of marginalised communities, Indian cinema has a long way to go.

GOUTHAM RAJ KONDA

Directed by Rajesh Rajamani, *The Discreet Charm of Savarnas* (2020) is an incisive satire on "woke" Savarnas whose actions invariably perpetuate casteism. The short film is produced by Neelam Productions, director Pa Ranjith's platform—to forward the anti-caste movement with a belief in cinema for social change. In the film, Rajamani highlights the tokenistic and patronising attitudes among the Savarna characters as they search for a "Dalit-looking" actor to play a Dalit character in their upcoming film. While it pushes for Savarnas to introspect on their messianic attitudes towards Dalits, it also entertainingly sensitises the other on the Savarna saviour attitude through the personification of the hypocritical wokeness.

When the Savarna characters in the short film can't find a "Dalit-looking" actor to play a Dalit character, they decide to expand their search, looking for a Dalit actor. However, a Dalit actor they do find is "too beautiful to be cast as Dalit." Therefore, they cast someone from among themselves as a Dalit, and darken their face to render a "Dalit look." This darkening of the face to portray a Dalit character has echoes of the West's use of the racist blackface.

The movement for diverse representation in Indian cinema, which is largely restricted to Bahujan directors, has to be institutionalised by India's film industries through a reimagination of the portrayal and representation of the marginalised

Bollywood is known for its classist and casteist practices in portraying a "poor and lower-caste look" among characters by using dark make-up on fair-skinned actors. Hrithik Roshan as Anand Kumar in *Super 30* (2019), Alia Bhatt as Bauria in *Udta Punjab* (2016), Bhumi Pednekar as Latika in *Bala* (2019), and Ranveer Singh as Murad in *Gully Boy* (2019) are some examples. Rajamani highlights this long-standing bigotry in contemporary Indian cinema by darkening the upper-caste characters' faces to portray lower-caste characters in this film.

He draws attention to another important aspect of caste prejudice among Savarna film-makers, which is their refusal to cast Dalit actors. With a few exceptions, Indian cinema has played blind to the caste discourse for most of its course. Such exceptions can be attributed to Bahujan directors like Pa Ranjith (Tamil), Neeraj Ghaywan (Hindi), Nagraj Manjule (Marathi) and to the so-called woke Savarna lot: Anubhav Sinha, Satyajit Ray, Shekhar Kapur, etc. The emergence of Dalit cinema with the arrival of these Bahujan directors has started addressing the importance of the caste discourse in Indian cinema from the Bahujan vantage—Dalit cinema has been successfully presenting the varied nuances of Dalit life and the concomitant discrimination.

The movement for diverse representation in Indian cinema, which is largely restricted to Bahujan directors, has to be institutionalised by India's film industries through a reimagination of the portrayal and representation of the marginalised. Though it has its own dark chapters, and continues to slip up, Hollywood stands as an inspiration in addressing the inclusive on-screen representation of coloured minorities.

The University of California, Los Angeles's (UCLA) Hollywood Diversity Report, which evaluates racial representation in Hollywood, reported that people of colour constituted only 28% of Hollywood's on-screen representation while making up 40% of the United States' total population. Black film-makers have been successful in carving a space for representing themselves in Hollywood, and this is reflected in the emergence of Black actors like Morgan Freeman, Denzel Washington, Viola Davis, and Samuel Jackson as legends, proven by the kind of roles they are offered and the prestigious awards they have won in their remarkable film careers.

Hollywood has been responding to this cultural change by carving out more space for Black actors to portray protagonist and superhero characters; and by celebrating iconic Black personalities on screen. Chadwick Boseman as T'challa in *Black Panther* (2018), Anthony Mackie as Falcon in *Captain America: Civil War* (2016), Ray Fisher as Cyborg in *Justice League* (2017), and Will Smith as Deadshot in *Suicide Squad* (2016) are some of the examples of Hollywood's newfound interest in casting Black actors for superhero characters. The popularity of the biographies of iconic Black personalities like Malcolm X in *Malcolm X* (1992), Jesse Owens in *Race* (2016), Bryan Stevenson in *Just Mercy* (2019), Jackie Robinson in *42* (2013), and Barack Obama in *Barry* (2016) is testament to the Black community's remarkable efforts in creating a cultural revolution by asserting their representation in Hollywood.

Now, how is India faring in terms of representation of the marginalised?

Indian cinema, especially Bollywood, has been very hostile and unwilling to engage with the caste discourse and to portray Dalit narratives. Our cinema often dilutes caste and religious marginalisation in the guise of "class divide" and poverty.

Moreover, even those movies made by Savarna film-makers that, to some extent, engage with the Dalit condition fall short

as they most likely have an upper-caste gaze and a messianic Savarna lead. These movies often perpetuate casteism, perhaps even unknowingly, or misrepresent the marginalised with their lack of a nuanced understanding of everyday discrimination, deprivation, oppression, and aspirations for social mobility.

Article 15 (2019), which was appreciated by many for its "bold" attempt in portraying caste violence, is a film by a Savarna director with a Savarna actor as the Savarna protagonist who "saves" Dalits and serves them justice and dignity. This is done in a way that fails to acknowledge and highlight the Dalit leadership's fight for the same—a classic embodiment of the messianic Savarna standpoint. *Article 15* was created in a Savarna cocoon, and can be viewed as exploitative for its portraying of Dalit struggles without Dalit actors and without Dalit agency. When asked about the complete absence of Dalit actors in *Article 15* in an interview with *HuffPost*, director Anubhav Sinha said that any such conscious choice would be inherently casteist, and that he chose his cast and crew based on their "merit" and not caste. This attitude exemplifies his rejection of the structural disadvantages that come in the way of Dalits trying to break into an impossible industry. As a Savarna film-maker, one with privilege, he ought to understand that preferring the marginalised is an equitable opportunity head start for an entrant (community), and not casteism.

Indian cinema seemingly has a disdain for casting Dalit actors in Dalit roles: Saif Ali Khan as Deepak Kumar in *Aarakshan* (2011), Ravi Kishan as Sanjay Kumar in *Mukkabaaz* (2017), Ram Charan as Chitti Babu in *Rangasthalam* (2018), Nawazuddin Siddiqui as Dasharadh Manjhi in *Manjhi* (2015), and Zeeshan Ayyub as Nishad in *Article 15* (2019). It goes without saying that neither is it interested in casting a Dalit actor for any role at all. Therefore, there is a near complete absence of Dalit actors in Indian cinema, except for very rare cases and in which the actors have anyway disappeared without recognition. The ostentatious wokeness that Savarna film-makers flaunt for their woke cinema on Dalits often blatantly ignore the importance of hiring Dalit actors or writers for true representation that moves beyond mere "saving."

From *Manthan* (1976) to *Article 15* (2019), Savarna film-makers, in both parallel and mainstream cinema, have maintained an upper-caste gaze in portraying Dalit characters. Their stories essentialised the presence of their kind as the protagonist while negating Dalit-led struggles and Dalit actors.

The Discreet Charm of Savarnas is thus a breath of much-needed fresh air, as it takes a dig at exclusion and casteist prejudice in Indian cinema. It highlights the need for Savarna film-makers to introspect and to shift the camera from Dalits onto Savarna privilege and casteist attitudes. In doing so, it shows that Indian cinema should empower (not "save") Bahujan film-makers to portray Bahujan stories while simultaneously pushing for Savarna film-makers to get sensitised to the violence and injustice of Bahujan lives and struggles.

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Speech as Action

Even those speeches that don't intend to cause harm can lead to violence with the usage of "thick terms."

RICHA SHUKLA, DALORINA NATH

The acts of rioting and violence in Delhi earlier this year are pieces of a collapsing domino: the effects of one disastrous action are leading to another and more—just like one piece of a domino leads to the fall of another—only, we are not sure how far and for how long! Naturally, it is presumed that there was an exterior element (such as a blow or a pat) that has started this line of disintegration. We argue that the acts of hatred and violence in Delhi are the pieces of a domino, set in motion by the exterior element that is voices of hatred.

"Rape" is a thick concept, in that there can be no good rape. The word itself has the act of causing harm inbuilt

At times, the line between speech and action gets so blurred that it becomes difficult to differentiate the two. Thus, to say something is to do something—a theory proposed by John Langshaw Austin in his speech act theory. Arguing that speech was performative in its essence, Austin differentiates between the three acts that speech performs: locutionary, illocutionary and perlocutionary. Of these, the perlocutionary act is of our interest. Perlocutionary speech acts try to persuade, convince, or elicit a reaction. Speech does not only involve the participation of the speaker, but also affects the acting agency of the listener: the voices of hatred lead to the acts of violence.

Now again, the question arises, couldn't there be a fault with the listeners? Perhaps these speeches were meant to be generic, not "hate speech," and not meant to cause any harm to anyone or incite violence? Understanding and noting the difference between the speaker's intention and the listener's attitude, we still argue that some words can be loaded with harm, no matter the intention or understanding of anyone. For example, the Uttar Pradesh (UP) government, led by Yogi Adityanath recently turned the Prohibition of Unlawful Conversion of Religion Ordinance, 2020 into a law, to regulate religious conversions undertaken during interfaith marriages involving Hindu women and Muslim men, with the term "love jihad" being used to describe such unions. The use of such words is not just an instance of speech, but implies action on the part of the many agencies bringing in those regulations, and the many reacting to and being affected by these regulations.

American lawyer Charles R Laurance III labelled such words as "thick concepts." For example, the word "rape" is a thick concept, in that there can be no good rape. The word itself has the act of causing harm inbuilt. The meaning, the connotation, and the attitude while using it are all both harmful and negative.

Therefore, even those speeches that are not intended to cause any harm or lead to any violence can be harmful in their own ways if they have the usage of these thick terms. Laurance further says that hate speeches should not be protected under freedom of speech as they mean to cause harm to a member x who belongs to a group G just because x belongs to G, where membership in this group is an essential part of the identity of x. Perlocutionary acts and thick concepts go hand in hand when we talk of hate speech as they cause violence on many levels, and they have in them many thick concepts.

Perlocutionary acts and thick concepts also reflect the transition from the (speaking) self to the other. The recognition of the "other as a self" leads to the questions: Are the effects only limited to the minds of the listener? Is the listener passive? The listener is a culmination of both their mind and body. In Delhi, the effects of the hate speeches reflected in the actions of the bodies of the rioters. Therefore, the speaker of the hate speeches was held equally accountable for the actions of the bodies of those creating violence.

The usage of such language, even unintentionally, weighs equally to the intended meanings of hate speeches of the speakers or the understanding of the listeners, or their intention to cause violence in Delhi. The leaders delivering the lectures in Delhi were involved in the usage of thick words, therefore intending harm to a group of members in particular.

As for the blurred lines of speech and actions, we realise that there were no such stringent lines to begin with in the first place. Any and all kinds of speech (emphasising on the voices of hatred) have the potentiality to move agents, their minds, and their bodies. Speech is equally accountable for the actions that lead to the domino effect.

There are moral, social, and performative imperatives that speech carries. For instance, recently, Odisha Chief Minister Naveen Patnaik declared that couples in inter-caste and inter-religious marriages would be rewarded by the state government—an example of speech as indicating reformation, as opposed to the example of UP cited above.

"Love jihad" and the threat of violence begs the following questions. How does social determination account for the value of our bodies? How does it decide when a person's immediate identity, which is so embodied in nature, can be treated as disembodied? How does society value our bodies and how does it strip them of value, and in what instances?

Our bodies come with a certain value, but the Delhi riots make us think that it is our bodies that pay a price for our speech. Our speech is not mere words, adjectives, and nouns, but as Jean-Paul Sartre said, words are like loaded guns, ready to shoot wherever you aimed it for. Speech can be aimed for destruction, instructions, reformulation as well as censorship. The hate crimes of Delhi, the riots that shook the core of Indian secularism, are not solely actions of hurting bodies of humans, abusing them, and not even just physical violence. It is about using the agency of speech as an instrument of stirring violence. With this realisation, we come to see the bigger picture: speech is a powerful action, an agency sometimes more powerful than any other.

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Karna, the Dark-fated One
A New Origin Myth

Following anthropologist Iravati Karve's grounding of the *Mahabharata* in realism, the author proposes a new origin myth for Karna, brother to the Pandavas.

V VAMSI VIRAJ

In her monograph on the *Mahabharata*, *Yuganta* (1969), anthropologist Irawati Karve proposes an exciting theory on the paternity of the Pandavas. The story device of different gods "granting" sons to Kunti with their essence (akin to the Virgin Mary myth) is implausible when we ground the epic in realism—treating it in a historical sense as Karve does. These subplots, including Karna being born with earrings and armour, must be seen as later additions. Through a close reading of the original text, she determines Vidura to be Yudhishthira's real father. Pursuing this theory further, I explore the parentage of her first born, and how this affects his journey: Which character's strengths are considerable enough for us to presume he could have fathered the mighty Karna?

Karve concludes that it is Durvasa, the famously angry sage, who grants Kunti the boon to invoke the gods for children. (If it was all metaphysical, why did Kunti not invoke any powerful goddess?) Kunti serves Durvasa for a year, supposedly providing any service he demanded, including sharing his bed. There are certainly instances of sages being called upon to extend dynasties, like Vyasa saving the Kurus by fathering Dhritarashtra, Pandu, and Vidura. But to imagine old sages hankering after young princesses—be it Kunti, Draupadi, or Amba—does not fit with the historical times or narrative layers that the *Mahabharata* deals with.

Further, the tale of Parashurama's curse makes the union of Durvasa and Kunti untenable. It involves Karna bearing the pain of being stung by an insect to not disturb his guru Parashurama who is asleep, resting his head on Karna's lap. Parashurama declares that only a Kshatriya could bear such pain, implying that Karna was fathered by one. Karve argues that this incident is apocryphal as Parashurama lived several centuries before the events of the *Mahabharata*. But applying her own principle of realism, it is implausible that kings would offer their daughters to sleep with revered sages as part of their hospitality. And so, discounting Karve's theory about Durvasa but also considering Kunti consorts only with

powerful and learned men, it follows that the first of her trysts would have been with someone similarly prominent.

Kunti is originally born the sister of Vasudeva, father of Krishna. She is adopted by king Kuntibhoja so he could please sage Durvasa and beget a male heir. As Vasudeva's sister, Kunti must have attended his wedding to Devaki. Devaki is cousin to evil Kamsa. It is thus the mighty Kamsa whom Kunti must have had a tryst with, in all the gaieties of the wedding. As his sister-in-law, she is also in line to be his potential wife. However, the events after the wedding, wherein Kamsa imprisons the bride and groom and kills their first six babies, create an unbridgeable abyss between him and Kunti. Even if these killings are later additions meant to portray Kamsa's darkness and Krishna's divinity, the original *Mahabharata* records the latter killing the former for his oppression of fellow Yadavas.

Not for nothing does Karna believe himself superior to the Pandavas. He inherits pride and prowess from someone who, in the fantastical narrative of Bhagavata, terrified the gods themselves

Why is Kamsa whitewashed in the epic? *Mahabharata* is written as a story-within-a-story. Its main story is narrated to king Parikshit, a Pandava grandson. Given his status, the story must have been sanitised to ascribe noble origins to Kunti's children. Karve herself wonders about Surya (the sun god) being chosen, since he "plays throughout the later narrative a very subordinate and sorry part." Even if we consider the plausibility of Vayu and Indra birthing two of the Pandavas, it follows that a mighty rakshasa, who defeated these very gods, had fathered the first of Kunti's sons. The narrators sanitise any hints of the Pandava matriarch ever having been with such a wicked character.

Not for nothing does Karna believe himself superior to the Pandavas. He inherits pride and prowess from someone who, in the fantastical narrative of Bhagavata, terrified the gods themselves. It is this, rather than giving birth out of wedlock, that might have pushed Kunti to disown Karna. The guilt of birthing an "illegitimate" child is overlaid by the guilt of consorting with a tyrant king. Bearing a child by Surya or by a rishi would cease to be a matter of impropriety once you have reached a certain age and status in royal hierarchy—especially when the Kuru lineage itself was saved by a rishi. Was Kunti so protective of her virtue as a virgin that she'd let a terrible war happen, a war that might have consumed all her sons? One word from her about Karna and they would have called off the war, even at the cost of (insignificantly) "diminishing" Kunti's image. But what would have damaged her image irreparably is the identity of Karna's father. Some secrets you carry to the grave, even at the cost of the world going asunder.

Or was Kunti trying to protect Karna all along from Krishna's wrath? When Krishna approaches Karna to win him over to the Pandava side by revealing who his mother is, does he himself know who Karna's real father is? Can one imagine what it means to possibly be hated by a demigod? Krishna goads Arjuna to openly break the rules of combat to kill Karna, not just to end the war quickly or as retribution for Karna's excesses. Could it be that he himself harboured an inexplicable hatred for Karna?

Karve writes how Karna "struggled all his life to gain what he thought was his rightful status and his bitterness lay in not having got it." Karna is a man out of place everywhere. He's too powerful to belong among his own lowly caste. He is too conflicted of his identity to truly feel at home with his Kshatriya compatriots. Karve remarks that his insecurity drove him "to go to extremes both in his evil deeds as well as in his good ones." His hatred drives him to be the sole instigator of Draupadi's disrobing. But he also promises Kunti he would kill only Arjuna among her sons. We could upend this whole thinking if we see Karna's anxieties, his constant dread of always fighting a losing battle with destiny, as stemming from his origins. He is not just deprived of his status, he's deprived of his right to Kamsa's kingdom as his sole heir. Does he know who his real father was? Does Kunti ever tell him? Does it torment him?

There are several proverbs across languages of there being a thousand reasons for Karna's death. But what is it that makes his destiny so wretched? What is the driving force behind all the karmic injustice he suffers throughout his life? It cannot just be due to his low-caste status. He is suffering the sins of his father, bearing their consequences over and over again. Karve writes that "to some extent each major figure in the *Mahabharata* is defeated by life, but none so completely as Karna."

Nonetheless, Karna does his utmost to transcend this dark fate. Struggle he must and struggle he does, mastering warrior skills to match Arjuna arrow for arrow, killing the fearsome Ghatotkacha, letting Yudhishtira, Nakula and Sahadeva live in Kurukshetra to keep his promise, and leading the fearsome Kaurava army. In his greatest triumph, he refuses to switch to the Pandava side and gain everything—kingdom, Draupadi, and recognition which he so craved. Karna, the dark-fated one, is not his father—he does not settle for lesser things, for worldly power and possessions; he is his own man, in life and in death.

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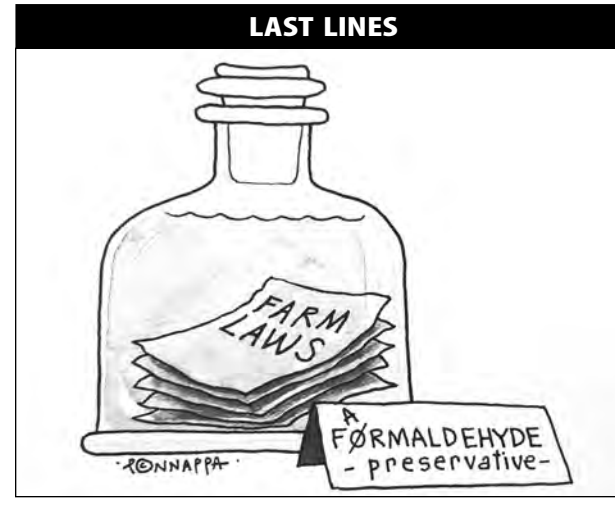
LAST LINES



Sameeksha Trust

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It has always been a struggle to ensure *EPW*'s financial viability and sustainability. The resource constraint has been exacerbated by our conscious decision to abstain from receiving direct government grants and donations from abroad, to preserve the autonomy and independence of the journal.

With the Covid-19 pandemic and the consequent nationwide lockdown, *EPW* is now experiencing an unexpected and drastic drop in revenue from retail sales (as most of the newsstands are still closed) and advertisement income (as advertising has contracted sharply with the crisis in the economy), resulting in an acute financial crisis. This is not unique. Most of India's print media organizations are going through a similar predicament leading to closures, large-scale retrenchment of staff, and salary-cuts.

It was our endeavour not to resort to such drastic measures in *EPW*. In the first two months of the lockdown, full salaries were paid to all *EPW* staff. The Editor and his team adopted drastic austerity measures and cut expenditure to the bone. In spite of this, there was a large operational deficit every month, which could aggravate further if the problems associated with the lockdown persist. If this excess of expenditure over income had gone unchecked, a stage would have come when we would no longer be able to keep *EPW* alive.

The situation became so critical in the month of June 2020 that there was no other choice but to implement a temporary measure of reducing staff salaries from July 2020. The financial situation of *EPW* is being reviewed periodically and the salary cut is being reduced gradually. The situation, however, still continues to look grim.

In these difficult and troubled times, an institution of *EPW*'s stature and credibility is needed more than ever before. Well-wishers of *EPW* have been reaching out and urging us to do whatever necessary to ensure *EPW*'s sustainability.

We therefore appeal to the community of readers, contributors, subscribers and well-wishers of *EPW* to come forward and make donations to the extent each one can so as to ensure that *EPW* continues to perform its historic role. This is urgent. And it is of utmost importance. We hope you will join us in supporting *EPW*.

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Azim Premji University was established in 2010 by the Azim Premji Foundation. The Foundation works extensively with the public school systems in many states in India, with a clear purpose - to contribute to a just, equitable, humane and sustainable society.

The University supports Education and related fields of human development through its programmes of study.

The University offers a liberal undergraduate degree in the Sciences, Economics and Humanities and post-graduate degrees in the fields of Education, Development, Public Policy, Economics, Law & Development.

We have open positions, with possibilities to teach in the Bachelors and Masters programmes. We encourage applicants from all fields, but we are particularly interested in the following:

a) Environmental Economics, Economics of Education, and Macro and Micro Theory

b) Candidates whose work focuses on the Indian context are of particular appeal

The faculty at the University engages with a broad range of paradigms in their teaching and research, and welcomes applicants working in diverse theoretical traditions within Economics. We seek candidates with a strong commitment to teaching and research and a willingness to contribute to a general liberal arts curriculum.

Application Process

Interested candidates should submit

- Recent CV
- Statements of teaching and research interests
- Two samples of recent academic work
- 2-3 letters of recommendation (to be sent directly by the referees) and a covering letter providing an indication of interest in Azim Premji University's unique mission

Application deadline: 31/01/2021

Reference Instructions:
Please ask for letters of reference to be sent directly to
econ.hiring@apu.edu.in

Application Instructions:
Email materials to
econ.hiring@apu.edu.in