18th ALL INDIA PEOPLE'S SCIENCE CONGRESS

S&T for Self-Reliant, Democratic and Climate Resilient Development.

27-30th December -2024

West Bengal University of Animal & Fishery Sciences, Belgachia, Kolkata.

Lecture Notes & Abstracts

Organising Committee

18th All India People's Science Congress

Kolkata

Science & Technoology for Self Reliant Climate Resilient Development

All India People's Science Network

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West Bengal University of Animal and Fishery Sciences
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'साक्षरता अभियान के पूर्व का इतिहास और आज का साक्षरता कार्यक्रम की स्थिति एवं सतत षिक्षा'
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18th All India Peoples Science Congress

Kolkata: 27-30 December 2024

Theme Paper

Science & Technology (S&T) will be crucial for the development trajectory of India in the coming decade or more in what is termed the knowledge ere when the possession of knowledge rather than just manufacturing or trade will determine economic growth and a country's position in the world. India aspires to become 'Atmanirbhar Bharat' as a means to attain economic growth and societal progress in this period, or even to become a developed nation by 2047. However, India faces significant headwinds in these and related fronts.

It is well known that investment in research and development (R&D) in India, at 0.64% of GDP (down from 0.76% a decade earlier), is extremely low in comparison with comparable countries, for example China with 2.4% of a GDP which itself is about 5 times larger than India's, or South Korea with 4.8% of GDP. Other countries like China have prioritized mastery over key technologies such as AI, advanced semi-conductors, 5G, solar energy, batteries and storage systems, so as to attain or maintain a leading position in the global economy. On the other hand, India is struggling in all these areas.

Currently, India is on an import-dependent path of seeking foreign investment to set up manufacturing industries in India in some of these sectors, but at lower rungs in the value-chain, unlikely to lead to significant generation of indigenous

knowledge or self-reliance. In the pursuit of increased R&D funding, a new centralized mechanism, the Anusandhan national research Foundation, has been set up reposing faith in investment by the private sector, which has historically been reluctant to spend on R&D even in its own industries, leaving India's R&D plans mired in uncertainty. India needs to look for another path towards strategic and sharp increases in R&D as well as to reform and strengthen institutional structures in the research ecosystem including universities.

Other than in advanced technologies, the country is facing mounting and growing unemployment especially among youth and women. ILO's recent report has highlighted that 80% of the unemployed workforce in India consists of youth. Even more important, unemployment among youth with secondary education has almost doubled since 2010 to about 65%. The figure is even higher among graduates, with five times more women not in employment, training or higher education than men. Increasingly, whatever employment is available is in the unorganized sector without social benefits, threatening the so-called demographic dividend. A few years ago, 32% of the workforce was over 45 years old, today it is 49%, and by 2040 over 91% of Indian society will have no access to pensions or other social benefits. It is no wonder that poverty has risen sharply as has frustration and social problems among the youth.

Self-reliance in S&T has been a core theme of the AIPSN, which has conducted numerous studies and campaigns on different aspects. In the current juncture, S&T self-reliance occupies a key place in determining how the country and its people progress and how they will face the future. It is therefore a central Theme for the 18th AIPSC.

Comparable middle-income countries have also invested significantly in education including skill development, and in health, both at an order of magnitude higher than India as a proportion of GDP, with much of the investment and institutions in the State sector. Here again, and especially of late, India seems headed in a questionable direction. In the name of rationalizing infrastructure, a sizeable proportion of public schools are being closed or merged, with inevitable adverse effects on enrolment and drop-out rates, particularly in rural, remote and backward areas, and has serious negative impact on girls, socio-economically disadvantaged sections and the disabled. Educational competencies have been found wanting at all levels. With the erstwhile Literacy drive, especially through popular mobilization and community involvement, having been abandoned, even basic literacy and numeracy may be negatively impacted. These losses are very unlikely to be compensated for by online education or distance learning. Centralization of university entrance examinations, along with cultural homogenization in Central Board text books, undermines State autonomy and school Boards, and negates context-specific curricula and teaching-learning as recommended by educationists. All these also superimpose a homogenization of culture over the multi-cultural reality that is India.

Higher education is being radically transformed under the new Education Policy with novel 4-year undergraduate courses comprising annual exit and entry points, with corresponding annual certifications whose value in the employment, vocational or academic ecosystems remain wholly unknown. The ability of inadequate and understaffed higher education institutions to handle all these systematic changes, including transferable credits from learning in other

institutions or for work experience, is doubted by faculty and educationists. Fees for such courses have also risen dramatically and full rein has been given to privatization and commercialization of higher education. Experts have pointed to the need for more PhDs and greater push for research in higher education institutions in India as essential for advancement in the knowledge era. Given the seeming obsession with centralized examinations in the new education policy, reflecting again in centralized exams even for PhD admissions as against more robust assessment of research proposals, the future appears uncertain here as well. Fresh evidence-based planning is required on all these fronts, including in skill development along with related education which have hardly been addressed, as reflected in the continuing complaints by industry regarding shortage of a skilled workforce and lack of employability of among those completing higher education.

There are also highly regrettable tendencies to suppress independent and critical thinking, and a scientific temper, in the educational system both in schools and in higher education institutions, as well as in society at large. School and college curricula and textbooks have been revised in a manner detrimental to knowledge of science and critical thinking. In Universities and colleges, openness to fresh and different ideas is being stifled while certain ideas, ideologies, uncritical acceptance of some received knowledge and even unscientific concepts are being imposed. In the wider society, various pseudo-scientific ideas are being propagated with support of powerful social groups and backing of people holding high office. Such assaults on critical thinking and scientific temper do not bode well for future generations and for the future of our country. AIPSN therefore conducted a

national campaign on scientific temper which included an intensive process of drafting a Declaration on Scientific Temper by prominent scientists across the country and adoption of the same at a National Convention in Kolkata on 28 February 2024.

Public health and related state-sector health care facilities continue in serious decline under the twin onslaughts of shortage of state funding of primary health, and privatization. Expenditure on health by Centre and States together amount to only 1.28% of GDP, while out-of-pocket expenses by households on health are twice that amount! Indians already spend a disproportionate percentage of household income on health, of which over 60% is on medicines alone. Government expenditure on health in India is so low that the country ranks 147 out of 184 countries! The low investment in the public health system by the Centre and most States, with the notable exception of Kerala and a very few others, was visibly demonstrated in the poor government response to the Covid pandemic.

The relative privileging of tertiary care institutions, already around 70% of the health sector, continues relentlessly, favouring the better-off and depriving lower-income groups and underserved areas of these services. Various government schemes give private hospitals, now almost like corporate chains, further support them by funneling care payments for government and other state-sector employees to them, almost decimating the more affordable state-sector care institutions. Government funding are instead now extended through private insurance companies, some of which have become corporate billionaires virtually overnight.

The problems in education, health, critical thinking and

scientific temper together undermine core democratic values of humanism, pluralism, social welfare and social justice, and are therefore a key Theme of the 18th AIPSC.

Besides these persistent and worsening problems, India is facing a relatively new and dangerous challenge, namely severe and repetitive disasters caused by climate change but compounded by badly conceived and implemented infrastructure and other activities in the name of so-called "development." Climate impacts have been witnessed since a decade or more, but these have been largely ignored by government officials and the political class, and perhaps even by the public at large, as occasional uncontrollable incidents. In the past few years, however, these have come to be recognized, including by common citizens, as resulting from climate change. Governments at both the Centre and the States can no longer ignore these but are yet to develop a coherent response.

Extreme heat and recurrent, prolonged heat waves including last year in 2023, the hottest year in human history, exacerbated in urban areas by the urban heat island effect resulting from concretized roads and buildings, and denudation of cooling green cover and building over of water bodies. Extreme rainfall, increasingly exceeding 300-400mm in a day or a month's quota of rain falling over just one or two days, is causing severe urban flooding in major cities every year resulting in enormous, recurring economic losses of thousands of crores per city. River floods, cloudbursts and flash floods are occurring regularly in hill and rural areas bringing loss of life and livelihoods, destruction of infrastructure and property. Landslides, land subsidence, even subsidence of whole towns like Joshimath in the

Uttarakhand Himalayas are taking thousands of lives each year. Again, these climate impacts are exacerbated by degradation of forests and mountain ecosystems, reckless road construction and infrastructure development in geo-morphologically fragile areas such as in the Western Himalayas and the North East. Sea-level rise and coastal erosion threatens the habitat and livelihoods of tens of millions of people, especially vulnerable sections such as fishers, all along both western and eastern coasts of the Indian peninsula.

It is high time these problems be faced frontally and a National Adaptation Plan for a climate resilient development pathway be framed and adopted through a participatory process involving the States, scientists, academics and other experts, and citizens groups, with adequate funding from the Union Government.

The 18th All India Peoples Science Congress in Kolkata on 27-30 November 2024 is focusing on these major challenges facing the country and its people, and has framed the Theme of the Congress as "S&T for Self-Reliant, Democratic and Climate Resilient Development."

The Materialistic Tradition in Indian Philosophies

Ashish Lahiri

Contrary to accepted wisdom, much of ancient Indian philosophy is suffused with rationalistic, sceptical, even atheistic ideas. The great Akshay Kumar Datta (1820-1886) had pointed out that none of the formulators of the six Hindu philosophies "have accepted an auto-creator of this world. Samkhya of Kapil is atheism plain and simple; Patanjali no doubt believes in the existence of God, but he has characterized God as only the maker and not the creator of this world. According to the systems of Gotama and Kanada, material atoms are eternal; they have not been created by anyone else. The ancient Mimamsa scholars have categorically denied the existence of God. And Vedanta says, this world has never been created at all, the phenomenal world is nothing but an illusion, so how does the question of a creator arise?" Even the Buddhist and Jain philosophies do not accept God as the creator of the world. Debiprasad Chattopadhyay was eloquent in calling Uddalaka-Aruni the first proto-scientist of the world, preceding the great Ionian Thales. The Chhandodya Upanishad records that Uddalaka-Aruni tried to test his hypothesis - that without food the mind becomes inactive - by conducting a carefully arranged quantitative experiment on his son. This method is the hall mark of materialistic science. The early Bankim Chandra Chattopadhyay (1838-1994) had also lauded the rationalistic arguments of the ancient Indian philosophers and

had lamented the gradual erosion of that trend with the advent of Hindu orthodoxy enshrined in the Puranas. Still, however, these philosophies cannot be characterized as strictly materialistic. First Debiprasad Chattopadhyay's and then Dr. Ramkrishna Bhattacharya's painstaking study has shown clearly that the Lokayata /Charvaka school of Indian philosophy was indeed a truly materialistic philosophy. Not only did they deny God or an after-world, they had the courage to challenge the Brahminical idealistic hegemony. By using the analogy of fermentation, whereby material things like rice or molasses could be transformed into something which caused intoxication, they presented the Madashakti thesis in order to posit that consciousness itself was a product of matter. They were persecuted not only by the Brahmins, but also by the Buddhists, for they were forthright in their denial of the soul and reincarnation. Nevertheless, one should be cautious in calling them materialists in the modern sense, because their idea of matter itself was naturally primitive and has been overridden by the modern concept of matter.

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The Art & Science of Communicating Science Effectively

Partha P. Majumder

National Science Chair, Govt. of India

Science is a way of life. We, as practitioners of science, have a responsibility. We need to give back scientific facts, methods and temper to those who support us. Our supporters include the public, media, government and many others. When we mean "giving back," we wish to make science intelligible, improve scientific temper and enhance science as a way of life. In this talk, I shall elaborate on these ideas with some examples.

Concept Note

Agriculture, Food Sovereignty, Climate resilience and Rural Livelihoods

Dinesh Abrol

AIPSN

Agriculture continues to be the largest sector as a source of livelihood in the Indian economy[1], however the gross value added (GVA) share of agricultrue accounts for only , however the gross value added (GVA) share of agriculture accounts for only 18.29%. This is quite low compared to the industry and service sectors, which constitute more than 80% of GVA. The sectoral share in income and employment of agriculture is also manifested in the rising gap in per-worker income; preference to work in non-agricultural occupations among youth has increased compared to older generations. The youth is moving out of agriculture.

Agricultural markets and innovation ecosystem play a critical role for the farmers in realising sustainable farm income. Agricultural inputs are essential ingredients of agriculture. The ongoing institutional reforms in respect of the markets and innovation ecosystem required for farming on input and output sides are faced with the challenge of corporate control. The Modi government has drastically reduced support measures that impact the peasantry and the whole sector including local businesses. The Modi government is working in the direction of passing on the command of agriculture to the big business groups. An

overwhelming share of investments in fixed assets in agriculture now comes from the farmer households themselves –82%.

The private corporate sector accounts for just 3 per cent of investments in agriculture. Yet, the government is rapidly transferring assets to it from the public sector, even when the public sector investment is merely 15%. The control of public assets created for agricultural education, research and extension, production and distribution of farm inputs is the latest development. Critically, agricultural credit, electricity generation, transmission and distribution, are now under the control of big business. Procurement, agro processing, food processing, value addition in agro-produce are all moving in the direction of private control. Private corporations care for neither mother earth nor farmers.

Pradhan Mantri Kisan Samridhi Kendras (PMKSKs) is an initiative of the Department of Fertilizers launched during August 2022. It aims to convert the existing village, block/ sub district/ taluk and district level fertilizer retail shops into 'Model Fertilizer Retail Shops' that will act as "One Stop Shop" for all the agriculture related inputs and services. As on August 2022, a total of 3.3 lakh fertilizer retail shops at district, block/sub-district and village levels are to be converted as PMKSKs across the country, wherein private corporations will have privileged access, and when the public sector is diminished the big business would be gaining control via the interlocking of inputs and services that the PMKSKs is going to facilitate.

The big tech has been given a free hand in the development of digital ecosystem for agriculture in recent

years. Microsoft is arguably the most heavily invested. The company says its ambition is to map and gather data on all of the world's farms and to integrate them into its digital platforms. Microsoft means not just all of the big industrial farms, but also all of the world's 500 million small ones. India's agri-tech sector is booming. The number of agritech start-ups rose exponentially from 450 in 2019 to 6224 in 2023. Although competition is fierce to build new apps to provide farmers with things like crop management advice or online marketing tools, but these start-ups are not Microsoft's competitors. They are the building blocks for its cloud— where all of its data is gathered and stored and then converted, with artificial intelligence, into digital products that it can sell.

Microsoft gives Indian agritech start-ups free access and support to use its cloud of agriculture data, what it calls the Azure Data Manager for Agriculture (ADMA). The start-ups can use the platform and its huge amount of data to build their models, and in return they generate deeper and more sophisticated data for Microsoft's cloud. Corporate sector will promote one-size-fits-all solutions, and adverse impacts of these solutions can make peasant farming and farmers of small means unviable. Corporate solutions harm agro-ecosystem services namely soil health, water quality, crop diversity, animal diversity, and natural predator and pollinator populations.

The Indian Council Agricultural Research has entered partnerships with Bayer, Amazon and other giant corporations for agricultural research and extension services. Corporate capture of agriculture means a potential hijack of the small farmer-centric mandate. Public sector research

programs will now directly promote corporate agendas. Although India has had a strong and largest network of public extension system including department of agriculture, and Krishi Vigyan Kendras (KVKs) across the country have the ability to deliver advisory services and facilitate technology on the basis of their own ability that can be further strengthened, but a firm like Amazon has been allowed to make use of the KVKs, and the Bayer has been given access to R&D facilities created in the public sector for meeting the needs of the farmers.

The agricultural and rural workers are the worst hit; the deepening agrarian crisis coupled with the use of labour displacing technology has reduced the availability of work to minimal level resulting in underemployment and unemployment for rural labour. Lakhs of small and marginal farmers have been forced to sell their land. Artisans have also lost their work and many are forced to work as agricultural labourers. Currently, the share of cultivators is 45.2 per cent, and that of agricultural labourers has risen to 55 per cent. The real wages of agricultural and rural labourers has not increased and are stagnant. Most of the agricultural workers are Dalits and tribals who are not only economically exploited but are also socially oppressed denied of access to land and other resources such as water, fodder and fuel, and are forced to depend on social welfare measures. Dalits and Adivasis have been forced into casual work and in many cases displaced due to diversion of land grabs and lands for industry and urbanization. These sections perform significant proportion of the farm work, and the work within fisheries, animal husbandry and forest related occupations.

The predominance of women across vulnerable social

groups highlights the discriminatory tendencies within rural society and economy. The participation of women in paid agricultural work has been declining; their dependence on agriculture has not decreased. Many farmers including agricultural labourers are dying by suicide. Youth are exiting agriculture. Corporates have neither an interest nor the capacity to offer region-specific solutions. They centralize knowledge to maximize surplus. Corporates treat nature as a source of rent. And also utilize market power and control as a source of rent.

Corporate capture of agriculture means, among other things, continued import of pulses, oilseeds and wheat from the US, Australia, Canada, and virtual exports of land, water and cheap labour from India to serve them in respect of their exotic food requirements which they are not in position to grow. This division of labour would seriously threaten the sustenance, even survival, of small and marginal farmers and rural labour. Bayer has recruited large landowners to sell cattle feed and other products to small farmers. Large landowners with the help of private corporations are taking over procurement of milk from the small farmers for Nestle.

Amul, a cooperative of Gujarat farmers, has chosen to replace its cooperative structure with a corporate structure. The Union Government seeks to introduce the corporate model in the cooperative sector. The launch of the Grain Storage Project in the Cooperative Sector,' through Primary Agricultural Credit Societies (PACS) is also an attempt to corporatize the farmers' cooperatives. The implementation of this project is taking place through convergence of Agriculture Infrastructure Fund (AIF) and Agriculture Marketing Infrastructure (AMI). Subsidies and interest

subvention benefits for undertaking infrastructure development will be restricted to the participating PACS. Attempt is to bring the corporates into the cooperative sector. Corporate sector firms active in the ecosystem are entering not only directly but also under the guise of new schemes for agricultural infrastructure development, co-lending and cooperative sector.

Small holders need to be actively supported by Union and State governments through the cooperative structure. Corporate approach means ultimately death knell for the small holder agriculture. The challenge of climate change demands the adoption of integrated farming systems approach that will considerably reduce the risk of small and marginal farmers. We need to reduce negative impacts of excessive use of inputs, particularly inputs of a chemical nature. We need to encourage recycling and improve input and resource use efficiency. Ecologically integrated farm inputs and resources are the need of the hour. Kisans need support from rural labour to adopt the methods of sustainable farming.

The Modi government seeks to transfer control of common lands to the corporate sector for solar installations, wind power and bio-fuel production. Common land resources need to be protected for the benefit of food production and soil health. Water bodies, grazing lands, trees and livestock need to be conserved. Only kisans in alliance with rural labour can rationalise and reduce the use of costly external inputs. Corporate power can be challenged in production by farmers and labour with the public sector on their side. An alternate win-win agenda for farmers, rural labour, self-reliant agriculture and local value addition is desirable. It

will only be possible with science and bank finance standing on their side rather than on the side of the private corporate sector.

The entire set up has been imposed on India by Western corporations with their governments acting through the toxic ecosystem made possible by the WTO. Farmer protests across the world are linked in some way with the devastation that the transnational corporate sector subjects farmers to everywhere. We call upon the Government of India to withdraw agriculture from the purview of the WTO. Simply put: Get the WTO out of agriculture. We cannot allow the forces of corporate globalization to swallow agriculture and farmers. A world without agriculture and farmers is neither feasible nor desirable.

With the formation of Kisan Mazdoor Commission (KMC) the "Nation for Farmers" platform having members from across the country AIPSN seeks to mobilize the support of the Indian people, scientists and state governments for much needed legislative action. The Union Government and State Governments need to stand with the farmers, rural labour, consumers, women and youth of rural areas. Society as a whole needs to rapidly act against the policy path promoting corporate control of agriculture. The Kisan Andolan at the gates of Delhi from November 2020 to December 2021 was a historic turning point. For the first time ever, the farmers of the country were openly confronting corporate power.

With this in view, the KMC secretariat has drafted Agenda 2024 to mobilize support within political parties against corporate penetration into the industries and institutions involved with the supply of all types of agricultural input(s), knowledge production, dissemination and utilization activity

and the processing of produce and products. India cannot do that under the present WTO-corporate-driven framework. Farming under big business control means far fewer jobs for youth and decimation of farming households. The AIPSN is committed to mobilising support for the Farmers, Agricultural Workers, and Fisher folk, Livestock Farmers, Pastoralists, Dalits, Adivasis, Women and Rural Youth. From the 18th AIPSC the AIPSN members need to announce their 2025-27 activities and agenda keeping the policy developments in front. India needs farmers to practice agriculture to survive.

[1] According to the economic survey of India (2022-23), 65 per cent of the country's population lives in the rural areas with 47 per cent dependent on agriculture for livelihoods. Agriculture continues to be the mainstay of a large segment of the population. The sector employs largest share of the workforce (45.6% in 2019-20) compared to the industry and service sectors, which account for 54.5%.

Summary of my Speech at Valedictory Session

Malini Bhattacharya
Jadavpur University

I convey my congratulations to the AIPSN for the work that they are doing in various states of India in very adverse conditions.

My work as a cultural activist with some experience of communicating with people tells me that people's science and people's culture are not polar opposites as we are often made to believe these days, but they are closely linked with each other. It is the dominant culture of a growingly unequal society that alienates one from the other.

By people, I mean the majority of the people, that is, those who work to produce all the wealth that human society possesses but who can only enjoy its smallest share. Of course I am not trying to say that deprived of education, health and basic security as they are, they are still naturally possessed of a scientific temperament and are free to develop it as a part of their everyday culture.

Rather their lives are circumscribed by unreason and the function of dominant culture is to see that the people remain unable to exercise their natural faculties to combat this unreason. A mismatch persists and grows between how people live their lives and how they perceive their own life experience. They can only overcome it by challenging the boundaries set to their lives by this dominant culture.

This is where I think the tasks of a science movement and of a cultural movement are largely overlapping. Just as the cultural activist in our times cannot engage in practicing the creative arts without churning up the people's consciousness about their own trampled condition, so a science worker's intervention too is a cultural intervention which involves not mere demonstrations of scientific models and exposure of magical tricks, but the transmitting of awareness that can help people to understand and to exercise their rights to have greater command over their own lives. The science worker has to have as creative a role here as the cultural activist.

At this time when the dominant culture is the culture of big money its powers of mystification through technology, particularly media technology, have increased exponentially. The ISRO as well as the Ram Mandir are becoming instruments of such mystification. The need for the cultural movement as well as the science movement to work together against such mystification is now greater than ever.

Challenges in Science Communication

Anuj Sinha

Ex-Director, NCSTC

Man has been inquisitive about his surroundings. The struggle with nature has helped evolve the modern man. This has paved the way for 'science.' No facet of life is untouched by 'science' and most nations prioritize research in science for accelerated development.

People's Science

People's Science Movement in India has played a vital role in developmental practices by promoting science literacy, fostering community participation, addressing socio-economic issues and advocating for evidence-based policies. In the past four decades many campaigns by National Council for Science and Technology Communication, Department of Science and Technology, New Delhi (NCSTC) have yielded rich experience and more are needed.

Print, Radio, Television and science centers

Government set up Vigyan Prasar in 1989 to complement efforts of NCSTC. It promoted popular magazines, posters, books in Hindi, English and regional languages and these have a steady demand. Innovative radio and TV programmes, films reached target populations including tribal populations. Vigyan Prasar has been folded it up in 2022/23. Science Museums have been built in many cities that encourage visitors to understand science and engineering concept.

Larger experiential galleries with interactive displays, simulators and I Max theater showing films with special effects.

Public understanding of science

National Institute of Science and Technology Development Studies, New Delhi (NISTADS) developed field studies to assess Public Understanding of Science. Major reorganization of CSIR laboratories has witnessed forming of National Institute of Science Communication and Policy Research, New Delhi (NISCPR) during the last four years. It has prioritized many areas of studies but not Public Understanding of Science.

Innovations in Science Communication

The digital revolution offers many opportunities for effective science communication. The last few decades have helped develop a network of organisations dedicated to popularizing science. Most activities by science organizations, academic bodies and academic institutions, are:

Training of journalists, science teachers, communicators;

Awards for outstanding science communicators;

Publications of books, popular magazines, films, radio programmes;

Exhibitions- in rail coaches with attractive activities on railway platforms; and

Creativity encouragement and problem solving in Children's Science Congress.

The Way Forward

Communicating science to multiple stakeholders and bringing scientific temper among them are not trivial challenges. Integration of various formats enhances the objectives of science outreach. The New Education Policy 2020 offers many opportunities although it introduces absurd mythology rather than evidence based science.

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A Note of Livestock and Fisheries

Pradip Kumar Das

University of Fisheries and Animal Science, Kolkata

India's livestock sector is one of the largest in the world. The total livestock population in India was 535.82 million, which included 192.52 million cattle, 109.85 million buffaloes, 74.26 million sheep, 148.88 million goats, about 9.06 million pigs, 851.81 million poultry population and 0.85 million other livestock population. Its contribution to the Gross Value Added (GVA) of the agricultural and allied sector has increased from 24.38% in 2014-15 to 30.38 per cent in 2022-23. It receives the research grants as a secondary and part of agricultural research, whereas the entire agriculture sector receives less than 14% of the national research grants. Agricultural subsidies in India are a significant part of the country's agricultural budget, accounting for 2–2.25% of GDP for agriculture. Out of which crop sector accounted for a major share (98 to 99%) in the total allocation of subsidies while the livestock sector accounted for only one to two per cent of the total subsidy. The Government of India spends below 10% on technology transfer activities in the animal husbandry sector. The Department of Animal Husbandry in most states is mostly dominated by animal health concerns with negligible attention to production-related advice to farmers spending only around 1–3% of their total budget on livestock extension activities. The NSSO survey revealed that only 5.1% of the farmer households in India were able to access any information on animal husbandry against 40.4% of the Indian

households accessing information on modern technology for crop farming.

Technology innovation and transfer to the farmers are hindered by the New Education Policy and agricultural development policy in India. Presently, about 25% of the dairy industry and the 50% of poultry industry in India depend upon the FDI. In the last decade, government investment in the agriculture sector reduced by nearly 1.1%, whereas, private sector investment increased by 9.3%. In 2023, the central government made nearly a dozen MoUs with the MNCs aiming to increase animal production and productivity through the private sector discouraging the activities of government institutions, like ICAR and KVKs.

Despite all odds, the growth in the livestock sector is robust with an annual average of 7.38%, whereas the rate was less than 4% in the last decade. The technologies developed in livestock sector in India are plenty and that contributed to substantial growth in livestock (7.38%) and poultry sector (8.0%). India is ranked first in milk, 3rd in egg and 8th in meat production. With India's extensive coastal and inland fisheries, technologies, like bio floc, cage culture, and satellite-based fishery advisories are transforming the sector. Sustainable animal husbandry and aquaculture practices with the application of innovations, like re-circulating systems may play a vital role in enhancing animal farming practices. Technology technologies to minimize waste and environmental impact while boosting productivity as well as resource conservation are the present needs of research.

Breeds of livestock, poultry and fishes provide valuable services to the ecosystem, such as maintaining semi-natural

ecosystems and conserving landscapes. Many breeds have unique characteristics that can help with climate change challenges. The decline in biodiversity due to human activities—such as habitat destruction, pollution, and climate change—poses significant threats to the stability and productivity of animal agriculture. Presently, 20% of economic animal breeds are at risk and speculated that by 2050, about 15 – 37% of them will be vulnerable. As species diversity diminishes, animal production systems face increased vulnerability to diseases, environmental changes, and resource scarcity, potentially undermining food security. The genetic resources are important for the livelihoods of poor people. Furthermore, healthy ecosystems support a range of services, including nutrient cycling and pollination, which are essential for sustaining animal populations. Low genetic diversity diminishes the capacity of animals to adapt to pathogens, thereby increasing vulnerability to diseases that could otherwise be mitigated through a more varied genetic pool. Hence, addressing genetic diversity is, therefore, pivotal to ensuring both the health of animal populations and the efficiency of agricultural productivity. Diverse animal breeds are essential for many production environments, including mixed farming, rangeland-based, industrial, and urban systems. About 17% of the world's farm animal breeds (8,800 livestock breeds from 38 different species) are at risk of extinction, and the risk status of 58% is unknown. Government plans mostly centred around the improvement of a few breeds. Conservation of animal biodiversity is left to farmers. Farmers being resource-poor, low holding (land/animal) cannot afford to maintain those animals which are superior to adaptation, but inferior to production.

Now, farmers' integration is required for cooperatives of livestock, poultry and fish farmers with the formation of Farmer Producer Organizations (FPOs) to technologies for breeding, feeding, management, and product processing. Appropriate agricultural value chain production systems should be a large focus on risk management measures. Suitable matching subsidy required in the animal husbandry sector by the Government, including subsidies on feed, Minimum Support Price (MSP) etc. Basic infrastructures, like electrification to support cold storage and post-harvest technologies, and subsidies for renewable energy tools in agriculture are the primary needs for sustainable animal farming. The production and productivity can be enhanced by increasing the volume or value of production by scaling up the system using better technology, improved packages of practices, and better training with quality inputs for diversifying the production system in India.

Bridging the technology gap in Indian agriculture requires a collective approach from policymakers, innovators, researchers and grassroots organizations. By addressing regional challenges, scaling successful initiatives, and fostering collaboration, the potential of animal husbandry, dairying, and fisheries can be unlocked to drive productivity, sustainability, and economic growth. Let us work together to shape a technologically empowered future for India's agricultural sector.

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Media Today and the Singing About the Dark Times

Prabir Purkayastha

Newsclick

Today, when people ask about media and the current dark times, the various attacks on media, and the use of multiple agencies like the National Investigation Agency (NIA), Enforcement Directorate (ED), Central Bureau of Investigations (CBI) and even the Income Tax Department, will the media become what people perceive as the lapdog of the Government? Instead of speaking truth to power, will the task of media only amplify the voice of power to the people? Would it instead become the Godi Media of the Modi government? These have been the fears haunting us since 2014. We saw how the Big Media: big news organisations—print or television—became the Government's megaphone. Activist and critical voices, opposition voices, be it of opposition parties, the farmers, workers, and students, were sought to be silenced under draconian laws like the Unlawful Activities (Prevention) Act (UAPA) or Prevention of Money Laundering Act (PMLA), where the jail was the rule, bail the exception.

With the 2024 elections, the belief that the Modi-led BJP was invincible crumbled. Before that, cracks had started appearing, first among the farmers and then more and more other sections of the people as they made their voices heard. The attempt to drown the voices of the people, the voices of resistance, was failing. The once invincible power of the

BJP's social media network to divide the people was fading. Suddenly, people were amplifying voices that did not want hatred and division. They do not want a Billionaire Raj where the distance between the rich and the poor has increased significantly. They want the benefits of India's economic growth to reach the working people, not simply a rentier class of billionaires. They do not believe what Modi and his colleagues in the Government do: help the rich become richer, and "they" will lift up the poor: the trickle-up theory. The trickle-up theory of PM Modi is even more outrageous than the trickle-down theory so loved by the theorists of the rich, the neo-classical economists. It was the voices of the people that the rich and powerful had thought they had silenced through their narrative of a one party, one leader, one nation that foundered in the 2024 Parliamentary elections. Instead of a 400 *paar* majority, the Modi government post-2024 fell significantly short of a majority, needing the crutch of a coalition and uncertain partners: a Nitish Kumar, who has switched political loyalties for the fifth time since 2015, and a Chandra Babu Naidu who also has an equally chequered past!

What has changed since the Modi-led BJP won two successive elections? Why did the money power, the divisive majoritarian politics and the high pitched campaign of Modi fail this time? Particularly as the opposition appeared weak, and the media including the pundits all predicted a Modi sweep for the third time? Why did the combination of money power, control over media and their megaphone even in social media fail?

To answer that question, we have to understand the structural change in the public sphere that is taking place

today. And what the public sphere is of which Media is a significant part.

The concept of the public sphere was articulated by Habermas in his book The Structural Transformation of the Public Sphere[1](1962), where he argued that people coming together in public spaces (not necessarily physical) and articulating the needs of society shapes public opinion and creates what he termed as the public sphere. Of course, the printing press and newspapers were crucial in creating this public sphere. Later, radio and television were added to the mass media, opening the public sphere to all those sections who could not read. From what was an elite media reserved for the literate classes, the mass media then reaches out to even those who cannot read.

It did not mean that the new public sphere became a neutral space in which people accessed "objective" news. It created two new issues: What is news, and can we separate the views of those who either select news or give their interpretations of news—their biases—from the news? This is what Noam Chomsky and Edward S Herbert wrote about in *Manufacturing Consent: The Political Economy of the Mass Media*[2].

While every technical step in mass media—from the printing press to radio and television—widened the scope of the public sphere, it also centralised media in a few hands. One, of course, is the state, which sets the rules for media, as well as those who, under capitalism, own the means of communications and, therefore, the media. While its access is "democratised" as it reaches far bigger audiences, the control over media becomes even more centralised. Within any country, whether in the West or countries like India, a

handful of big business houses today control media. Just a handful of Western news agencies control the flow of international news, the biggest of which are AP, Reuters, and AFP.

In India, the major news organisations are controlled by a few business houses: Reliance Jio, News 18 (Mukesh Ambani group), Times of India group (Jains), India Today, HT (KK Birla group), and now Adani, after acquiring NDTV. The English. Similarly, Hindi and other language press and TV are again controlled by a few business interests, including major regional players. The expansion from print to radio and television only concentrated the control of media in the hands of the rich, except the state media, which generally performed the role of being the mouthpiece of the ruling party and not as a public broadcaster.

The Internet has changed the public sphere once again. It has made it possible to create what was only a unidirectional streaming of content from a TV station—a one-way communication—to a two-way communication. With the emergence of social media—Facebook, YouTube, Twitter—we have the possibility of two-way communication and a new generation of content creators. Anybody with a good cellphone or a decent camera and a mike can become a "content creator". This new public sphere has created new media stars: popular Bhojpuri singers and anchors who have been driven out of TV, such as Ravish Kumar, Abhisar Sharma, Punya Prasun Bajpai, a new breed of YouTubers like Dhruv Rathi, Kunal Kamra to gain traction in a way that can no longer be controlled by the erstwhile owners of the broadcasters. Of course, under capitalism, the question remains about who owns platforms like Google, YouTube,

and Facebook-Meta. The Internet has also created new monopolies of Google and Facebook-Meta, as well as the economics of the new media, like the old media. It is also ad-driven, with the lion's share of the ad revenue going to Google and Facebook.

We can argue why did then the opposition parties lose in Maharashtra and Haryana in the state elections after winning them only a few month back in the general elections? I am not going to do a detailed election analysis here, except to point out in elections, a small swing can create big impacts. And in both these elections, the swings in the voting was of the order of 1.5-2%. Small swings have big impact in first past the post election scenario. So yes, the peoples unity that had built in the general elections did not last fully a scant few moths later. The lesson for us is that the ruling party has still a huge electoral machinery and money power unlike the opposition. What the opposition and the progressive moments have to do is to be vigilant, organise better and get larger sections of the people involved. It is their elections, not simply that of a few parties. And how to harness the creativity of the people visible in the public sphere to elections as well!

The problem of the state, or the ruling parties running the state, is that they thought that by controlling the mainstream media and their power over social media, they could control the narrative in the public sphere. Unfortunately for them, the rise of dissent in the new media risks the narrative that the rulers want to impose.

On *the dark times*, Bertolt Brecht, the famous German poet and playwright, wrote:

In the dark times

Will there also be singing?

Yes, there will also be singing.

About the dark times.

This was in Germany in 1938. In India today, the people amplify the singing of the dark times. It is about that little instrument that people have in our hands—600 million cellphones that we use—allowing us to talk to each other, and listen not to just media of the big business houses—Big Media—but what we want to hear: voices of the people, the voices of poets and singers; the humour of comedians; dissident voices. The new media was born out of a technological change that created new monopolies like Google and Meta-Facebook. But it also amplified our voices!

That is why the Government wants to shut down the individual voices that are being amplified by the people themselves. That is why the Government wants to introduce a Fact Checking Unit (FCU), which would decide what is true or false; what George Orwell described in the book *1984*[3] as the Ministry of Truth. All criticism of the Government could be described as false by this Ministry of Truth and banished from the net. Unfortunately for the Government, the Court has judged that such a Fact Checking Unit violates the Freedom of Speech guaranteed under the Constitution. The second was a Broadcasting Bill, which proposed registering all people on social media who create content in order to control them. The Government has belatedly realised the problem of registering 600 million mobile phone users who also post on Facebook, YouTube and Twitter/X. This is akin to King Canute asking the ocean to go back so that His Majesty's feet will not get.

Yes, our voices are under attack. But yes, we will have the singing of the dark times, now more than ever, just as we did during the 1975 Emergency, leading to its defeat in 1977. Or, as *our songs say*, *people united can never be defeated*!

1. Habermas, Jurgen, The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society, MIT Press, 1991.
2. Noam and Herbert, Edward S, Manufacturing Consent: The Political Economy of the Mass Media, Penguin Random House, 2002.
3. Orwell, George. Nineteen Eighty-Four. Penguin Classics, 2021.

Biological & Medicinal Science in Ancient India

Gauri Avinash Haval

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Indian Knowledge system is one of the subjects introduced into New Education Policy 2020. The topic of 'ancient science' is a debatable issue even from the historical point as ancient knowledge in the area of medicine is a mix of what we consider scientific and unscientific in the light of modern science. Much the progress in 'scientific thought' in the area of life and biology is modern. Actually the focal point of the debate should be to what extent we can call the ancient knowledge as 'scientific knowledge'.

To understand ancient Indian knowledge it is useful to take a historical approach beginning with an understanding of the formation of Indian subcontinent, arrival of humans, their journey till current era. The formation of the Indian subcontinent can be understood through the theory of continental drift, Pangea, breakup of Pangea, separation from Gondwana and India's collision with Eurasia. This process of plate movements over millions of years shaped the current geography of the Indian subcontinent, with the collision of India and Eurasia being a major event in its geological history.

Humans arrived in India around only 65000 years ago. The arrival of humans in India, their early migrations, and the subsequent development of settled agricultural life, leading to the rise of the Indus and other river valley civilisation around 7000 BCE. Transition to Sedentary life

from hunter gatherers and nomads leads to mature civilisation. Ancient classifications of animals and plants were made based on observable traits and environmental factors, with some limitations in scientific rigour compared to today's standards. The Sushruta Samhita and Charaka Samhita (1500 BCE -500 BCE) classified plants and the role of plants in early Indian society. It also emphasizes how the knowledge about plants was rooted in empirical observation and practical application. Ayurveda is an ancient system of medicine grounded in empirical observation and holistic understanding of life, matter, and health. The Panch Mahâ Bhuta theory plays a central role in explaining the human body and its transformation from the elements. The importance of fire (Agni) in sustaining life and health is a key concept, with food being considered the primary source of health and vitality. Ayurvedic medical practice is deeply interconnected with nature, where all substances have potential medicinal use. The Caraka Samhita highlights this by saying, "The entire world is the teacher of the intelligent physician," suggesting that practical knowledge, derived from observation and experience, is the true path to wisdom in medicine. Despite its scientific potential, medicine in ancient India could not make much progress, growth and development in later periods until the modern period. The reason could be lack of scientific methodology, the separation of practice from theory, and the contempt for medicine and its practitioners in the law codes of Apastamba, Gautama and Vasistha. Like the other law-givers, Manu declares that it is prohibited for members of higher castes to accept food from the physicians. This social norm could have been the most serious external factor that interfered with the further scientific development of ancient Indian medicine despite its potential.

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S&T Self-reliance and Emerging Technologies

Perspective Note

Self-reliance Desk

Self-reliance was one of the pillars upon which independent India commenced her journey. It was aimed to provide people with the basic necessities of life and to create a vibrant culture wedded to egalitarian development. The progress that was witnessed in the first four decades after independence met with considerable slowdown after economic liberalization was introduced in the country. In the last three decades since then, the aim of self-reliance appears to have been given up and it is envisaged in government documents that MNCs will play an important role in India's advance towards leadership position in S&T.

It is to be noted that the S&T situation has changed considerably since the time that India embarked on her journey in 1947: India's internal capacities are far advanced than what they were at the time of independence. While core issues in S&T remain, one must note the emergence of new technologies.

In all these, the role of education, research and development, human research training are important components.

The idea of the sub-plenary is to review the status in these emerging technologies and relate them to capability building with reference to , human resource, knowledge base generation and livelihood issues.

Climate Change and Agriculture

Shantanu Jha

Bidhanchandra Krishi Viswavidyalaya

No issue is more global than global warming: average temperature of earth surface is now about 1.2°C warmer than late 1800,i.e. that of before industrial revolution.And everyone in this planet shares the same atmosphere.Virtually all scientists agree that green house gases have contributed to global warming and rising sea levels and this is a result of human activity. 80% of it has been resulted from burning fossil fuels and 20% from deforestation.Energy, industry, transport,buildings, agriculture and land use are main sectors causing release of green house gas.

People's perception on climate change is only warmer temperature. But they,by and large, can't perceive that this is only beginning of the story. The earth is a system and everything here is interconnected. Changes in one area can influence change in all others. We now can expect more droughts and floods,water scarcity, severe fire, melting polar ice,rising sea level, catastrophic storms and declining biodiversity.

Indian agriculture and climate vulnerability :

Indian agriculture is highly vulnerable to climate change due to its dependence on weather and climate conditions. Some key factors :

Temperature Increase

1. _Rising temperatures_: India's average temperature is

projected to rise by 2-4°C by 2050, leading to changed growing seasons, reduced crop duration, and altered phenology.

2. _Heat stress_: Increased frequency and severity of heatwaves can damage crops, reduce yields, and affect livestock productivity.

Changing Precipitation Patterns

1. _Erratic rainfall and shifts in monsoon patterns_: can disrupt crop planting and harvesting schedules.

Extreme Weather Events

1. _Increased frequency of extreme and unseasonal weather events_can delay in crop sowing resulting in increased vulnerability to pest and disease infection,damage crops and affect yields.

Regional Vulnerability

1. _Regional disparities_: Climate change impacts vary across regions. We need to assess the key challenges say in high altitude, arid areas or in coastal saline zones.

2. _Vulnerability of smallholder farmers_: Smallholder farmers, who dominate Indian agriculture, are more vulnerable to climate change due to limited resources, lack of access to credit and insurance, and limited capacity to adapt.

Sectoral Vulnerability

1. _Crop vulnerability_: crops like wheat and rice being more sensitive to temperature and precipitation changes.

2. _Livestock vulnerability_: Livestock are vulnerable to heat stress, changed feed availability, and increased disease prevalence due to climate change.

Socio-Economic Vulnerability

1. _Poverty and inequality_: Climate change can exacerbate existing poverty and inequality in rural areas, particularly among smallholder farmers and marginalized communities.
2. _Migration and displacement_: Climate change can lead to migration and displacement of rural communities, particularly in areas with high climate vulnerability.

To address the vulnerability of Indian agriculture to climate change, it is essential to develop and implement climate-resilient agricultural practices, improve weather forecasting and early warning systems, and enhance the capacity of farmers and rural communities to adapt to climate change.

Practical adaptation options to improve food security and resilience

What practical steps can smallholder farmers take to adapt their agricultural practices to secure dependable food supplies and livelihoods? And can they do this while also decreasing greenhouse gas emissions or increasing carbon sequestration, thereby decreasing future climate change.

Climate-smart options for a vulnerable village can be of help. These might include climate-smart technologies, climate information services, local development and adaptation plans and supportive institutions and policies, all tailored to meet that community's needs. The community chooses its

preferred options in a process that aims to be as participatory and inclusive as possible, encouraging women and more vulnerable groups to participate.

Interventions that help farmers discovering the value of agroforestry, with alleys of maize, sorghum and other crops sandwiched between rows of multi-purpose trees that stabilize and enrich the soil. What's more, demand for trees has led to nurseries springing up to supply tree seedlings.

These nurseries in turn are becoming an important source of income, particularly for women.Working with farmers to incorporate small livestock, such as poultry, sheep and goats, into their farms brings additional resilience, income and food security.

Other activities focus on the management of natural resources. In Bihar, India, where soils are prone to water-logging, new drainage techniques can get rid of flood waters more rapidly at the same time as recharging aquifers; while in dryer villages in India and Kenya, rainwater harvesting is important.

In Sundarban area of West Bengal and that of Bangladesh,sea level rise is resulting in,increased flooding,salt water intrusions into fresh water sources-affect crop growth and soil health. Frequency of extreme weather events like storms also is being recorded. Local forewarning systems,choices of crops and varieties,expansion of mangrove belts,mitigation of human tiger conflicts are some of the special intiatives in vulnerable villages to be adopted.

More effective management of soil carbon, precision application of fertilizers and energy-efficient machinery all play a part, depending on the specific needs of each climate-smart village. The primary goal of all the interventions is to

help farmers to be more resilient and ensure food security. But there may well be gains in mitigation, as many of the chosen technologies decrease GHG emissions.

Climate-Smart Services

In addition to farm practices, farmers in climate-smart villages are also testing climate-smart services, such as tailored weather forecasts to plan planting, harvesting and other activities on the farm. Advisories and weather forecasts are being delivered by mobile phones, and phones are also being used to enable farmers to buy index-based insurance that gives them a measure of protection in the event of extreme weather.

Spreading the word:

The approach of climate-smart villages is tailored, rather than one-size-fits-all, and there is enormous scope for learning from what works in one site and adapting it for others, an approach the project calls "knowledge smart". For example, farmers from one climate vulnerable area learn from others.

Training-the-trainers is another essential element in farmer learning networks.

One of the great strengths of the climate-smart villages approach is its inclusiveness. Farmers from different communities, researchers from different disciplines, non-governmental organizations and other partners, all come together to test a range of options in an integrated fashion. Efforts to date show how food security and resilience can be improved in the face of climate change and at the same time suggest ways in which smallholders in all sorts of communities can adapt their agriculture.

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Health Session Brief

Indranil Bhattacharjee
AIPSN

India is among the most privatised health systems in the world. More than half of the money spent on health comes from peoples' pockets. The National Health Policy 2017 actively promoted the growth of private sector in healthcare. The consequences of private sector led model of provisioning are well known distortions, induced consumptions, drive towards more technology intensive care and above all high cost of care. A majority of the people, particularly the non-rich find it difficult to afford healthcare in India and huge inequities in access persists. There is an effort to deliberately underestimate the problems of private sector and hush up the real issues under the garb of regulation. Global experience suggests that most of the developing countries do not have the capacity to regulate private health sector and especially corporate hospitals.

Price of essential medicine has remained a major challenge for a vast majority of people in India, despite being a major producer and supplier of cheap medicines across the word. While price of essential medicines are rising at a very high rate, we see a strong nexus between governments and pharma companies. There have been several cases where quality of medicines have come under scrutiny and pharma companies have evaded punishment by donating in electoral bonds or bribing. In this session various issues of access to medicines, including pricing, quality, issues of patent and

international trade related to medicines, access to quality medicines in public facilities would be discussed. We would also discuss our experience of health rights campaign, the role of communications in effectively taking forward campaign messages to people.

Present and Future of Regenerative Agriculture in India

Dr. Raseena N R

KSSP

Regenerative agriculture is an innovative approach to farming that emphasizes restoring and enhancing the natural ecosystems within agricultural landscapes. By prioritizing soil health, biodiversity, and ecological balance, regenerative practices aim to reverse environmental degradation, improve crop resilience, and contribute to climate change mitigation. Key practices include cover cropping, reduced tillage, crop diversification, agroforestry, integrated pest management, and composting. These methods not only improve soil fertility and water retention but also enhance carbon sequestration and biodiversity, supporting both agricultural productivity and environmental sustainability.

The future of regenerative agriculture lies in scaling these practices through policy support, technological innovation, and widespread education. However, the transition faces challenges such as limited awareness among farmers, the initial cost of implementation, and the need for market incentives. Additionally, quantifying the benefits of regenerative agriculture and integrating these metrics into existing agricultural frameworks remain significant hurdles.

Government policies and incentives are pivotal in driving adoption. By offering subsidies, tax benefits, and technical support, governments can encourage farmers to embrace

regenerative methods. Policymakers must also prioritize research funding to develop cost-effective, scalable solutions tailored to regional needs. NGOs play a critical role in capacity building, awareness campaigns, and fostering community-based initiatives that bridge the gap between farmers and resources. Research institutes contribute by advancing scientific understanding and creating innovative technologies, such as precision agriculture tools, soil health monitoring systems, and climate-resilient crop varieties.

Technology is a game-changer, enabling real-time data collection, monitoring, and decision-making for optimized regenerative practices. Digital platforms can connect farmers with markets, provide technical guidance, and facilitate knowledge sharing.

To ensure the success of regenerative agriculture, a holistic approach involving all stakeholders- farmers, governments, NGOs, researchers, and the private sector is essential. This synergy can transform global agriculture into a resilient, sustainable system that meets the demands of a growing population while preserving the planet for future generations.

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Manufacturing Consent in Digital Times

Prabir Purkayastha

Newsclick

Public Communications in Ancient Times

- Babylon Hammurabi's Code
- Ashokan Rock Edicts
- Town square, market place and village "criers"
- Oral reproduction and mass communications
- Oral bardic "texts" memorised and sung — epics and religious texts

Upper Part of the Stele of Hammurabi, King of Babylon.
The stele is inscribed with his great code of laws. The Sun-god is represented as seated on a throne in the form of a temple façade, and his feet are resting upon the mountain. Photograph by Mowat, Mansell & Co.

Writing: Papyrus, Parchment and Paper

- Papyrus in Egypt from 3000 BCE
- Parchment in Babylon 600 BCE
- Paper in China 2nd-3rd Century BCE from cotton rags, plants such as hemp, rattan, bamboo fibres

Hand-written Hand-Copied Texts

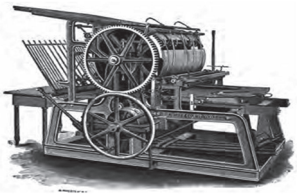
- One person-year for one book in the "monastic" mode
- Cost of a book $\simeq$ 25 pounds in the 13th century equivalent to $\simeq$ 1500 pounds today

Paper and Block Printing

Diamond Sutra Earliest Available Printed Book 9th Century

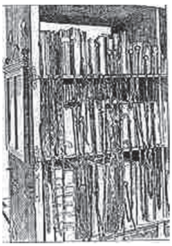
- Korea/Chinese used block printing on paper 6th-7th century
- Arabs/Turks carried paper to Central/West Asia after the battle with China on the banks of Talas River, 8th century (751 CE)

Gutenberg and the Printing Press



- Creates mass production and potential for mass literacy
- Foundation of the public sphere
- Mass politics, written laws and mass media

Books – Hand Copied to Printing



Reading Abbey produced 300 books in about 80 years

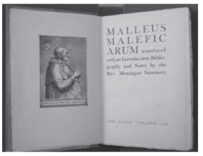
In 50 years (1450-1500), the number of books in Europe swelled from a few thousand to more than 9 million

Most Popular Books — First 200 Years

Gutenberg Bible

Printed:1455

Mallaeus Maleficarum or Hammer of the Witches — Text for Inquisition



Printed:1486

Birth of Copyright

- 1710 Statute of Anne (UK) limited term copyright as a monopoly of 14 years
- Belonged to the author
- Sonny Bono Copyright Extension Act (US) 95 years
- Companies — Disney — can own copyright not just the author

Popular Press and Mass Media

- Various news papers/gazettes started soon after the printing press, controlled by the rulers
- Birth of mass media: newspapers in 1890-1920 sold the readers to advertisers lowing costs
- Manufacturing Consent

Business Model of Mass Media

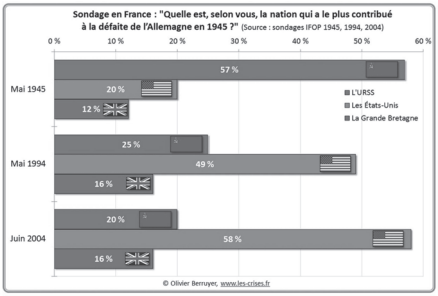
- Birth of "attention" merchants or selling eyeballs
- Products are the people, news is the packaging
- Birth of newspapers: selling snake oil, magic remedies to real remedies
- Today profits for news platforms are ad driven

- Selling us lifestyles of the rich and avoiding stories of poverty and hunger
- Big Capital drives the news through ads
- Pushback: Regulations, Laws, Anti-monopoly actions

March of Mass Media— Coercion to Consent

- Radio — Mussolini and FDR's Fireside chats
- Films —*Triumph of Will*, Hitler's Nuremberg 1933 Rally, Leni Riefenstahl
- Television as the new and more powerful media than radio broadcasts
- Broadcast model: Who owns the *means of communication*, "owns" the communication and the audience

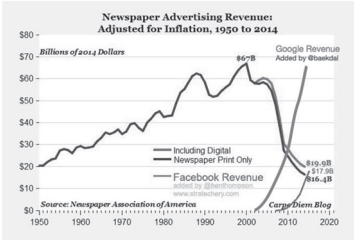
Memories of 2nd World War in France



20-30 million Russians died the 2nd World War against Germany, UK &US lost less than half a million each

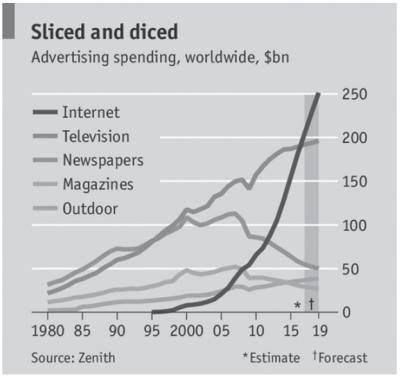
Digital Reproduction

- Converting books, music, films to information Infinite and perfect copies



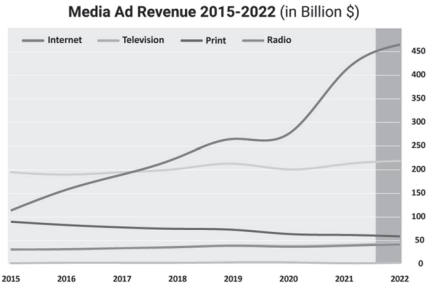



- Cost of reproduction virtually zero
- We create the copies on our PCs/Laptops/Smartphones

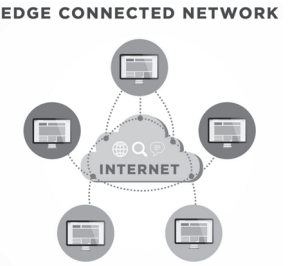


Copyright in the age of digital reproduction

Distribution in the digital age



Broadcast to Multicast



Enclosing the Net

- Almost 60% of web traffic today is Google, Meta, Microsoft, Apple, Amazon &Netflix
- When we email each other on Gmail or post on Facebook/Insta for our friends, we are communicating only through their platforms

Enclosing the Net

70% of web traffic today is Google and Facebook

Creating Demographies and Targeted Advertising

- We are thousands of data points for digital platforms to track our views, likes, dislikes, age, income, language, religion...
- Google and Facebook have a complete profile of us so can sell us far better than other mass media platforms
- The same principle works for selling politics and candidates
- The big platforms and their owners can control the narrative

From Manufactured Consent to Manufactured Ignorance

- A lie will go halfway around the world while truth is pulling its boots on
- MIT Study

Virality, Fake News and Platforms

- Facebook-WhatsApp a platform for "extortion" and fake news
- Virality is higher for fake news, therefore Facebook's business model is protecting it
- This is not a "bug" but a feature of Facebook-WhatsApp
- Zuckerberg lies as shown in UK document dump of his private e-mails (https://www.vox.com/business-and-finance/2018/12/6/18127980/facebook-uk-documents-emails-mark-zuckerberg)

Social Media and Democracy

- India: Elections & BJP 2014, 2018
- UK: Brexit 2016
- US Elections — Trump in 2016
- Bolsonaro 2018
- The US and Indian elections have very high digital spends as this is where the major battle for eyeballs are being waged today

What is to be Done: Social Media and Activism

- Clicktivism (liking, signing online petitions) doesn't bring change

- Need reinforcing loops between ground level organising of movements and social media
- Examples worldwide (both progressive and regressive:
- Tahrir Square (Egypt 2011), 15-M/Indignados (Spain 2011), Occupy Wall St (US 2011), IAm132 (Mexico 2012), OccupyGezi (Turkey 2013).

How Do We Engage

- Given Attention Deficit World, dynamics of Social Media
- Shed Jargon, Abstractions and use Concrete Demands/ Slogans
- Trending topics requires meticulous planning & coordination through WhatsApp/Telegram groups
- Social Media interventions Comprise 90% of organised activity
- Use Memes, Posters, Videos, Humour.
- Engage: Two-way communications, Popular culture
- Appeal to Emotion and sense of Fun
- Concise, concrete, achievable demands – like free education, electricity, water, health, land
- Attack "faces" which represent larger issues

How Do We Fight Back?

- Net neutrality so that we have *our* websites for *our views*
- Movements for regulating digital monopolies
- Protecting the "public" in the age of social media
- Organising people and having campaigns in the real world using *all media* including *social media*, and not clicktivism in the virtual one

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एक लम्बे अन्तराल के बाद हम पुरूलिया जिला के ईष्वर चंद्र विद्यासागर उच्च बालिका विद्यालय में सतत षिक्षा के राश्ट्रीय कार्यषाला में षाामिल हुए, यह कार्यषाला 30 सितम्बर 2023 से 02 अक्टूबर 2023 तक आयोजित थी। हम इस कार्यषाला में उन 34 करोड़ असाक्षर लोगों के बारे में बातचित किया जो अभी भी अक्षर ज्ञान से वंचित हैं। हम इस समय इस मुद्दे पर बात–चित किर रहे हैं, जब साक्षर भारत कार्यक्रम पूर्ण रूप से बन्द हो चुका है। राश्ट्रीय षिक्षा नीति में व्यस्क षिक्षा पर सिर्फ दो पृश्ठ हैं, जिसमें निरक्षरता निवारण की बात कही गई है। लेकिन इसे हम कैसे करेंगे इस पर स्पश्ट रूप से कोई रणनीति तैयार नहीं किया गया है। देष में पढ़े–बढ़े कार्यक्रम षुरू किया गया है जो एक तरह से खानापूर्ति है।

अभी केन्द्रीय सरकार के द्वारा नवभारत साक्षरता कार्यक्रम के नाम से साक्षरता कार्यक्रम षुरू किया गया है।

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- वित्तीय वर्ष 2022–23 से लेकर 2026 – 2027 तक।

- कुल वित्तीय राषि 1037.9 करोड़ रूपये इसमें 700 करोड़ रूपये केन्द्रीय सरकार देगी और 337.9 करोड़ राज्य सरकार देगी।

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सरकार के द्वारा पांच वर्श में 5 करोड़ असाक्षरों को साक्षर करने का निर्णय लिया गया है। ध्यान रखने की बात है कि अभी भी इस देष में 34 करोड़ लोग असाक्षर हैं, इन्हें साक्षर बानाने में तो वर्शों लग जायेंगे।

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1 मूलभूत साक्षरता और संख्यात्मकता

2 महत्वपूर्ण जीवन कौशल

3 व्यावसायिक कौशल विकास

4 बुनियादी शिक्षा

5 सतत शिक्षा

उनके द्वारा यह लिखा गया कि मोबइल एप से निरक्षरों का सर्वेक्षण करेंगे और उन्हें ऑनलाइन पढ़ायेंगे यह असंभव है।

उनके दस्तावेज में यह भी कहा गया है कि यह पूर्ण स्वयंसेवी होगा। स्वयं सेवक को स्वयंसेवक बनने के लिए एप में रजिस्ट्रेषन करना होगा।

यह स्कीम पूर्णरूप से ऑनलाइन मोड़ पर आधारित है। हम लोगों ने कोविड के समय इम्पैक्ट ऑफ, ऑनलाइन एजुकेषन पर सर्वेक्षण किया था, जब स्कूल में ऑनलाइन एजुकेषन असफल है तो असाक्षरों को साक्षर करना क्या सफल होगा ?

यह स्कीम पूरी तरह से ऑनलाईन स्कीम है जिन असाक्षर गरीब लोगों के पास अभी भी एन्डरायेड मोबाइल फोन नहीं है वे इस कार्यक्रम में कैसे सामिल होंगे।

इसी लिए भारत ज्ञान विज्ञान समिति पूरे देष के कुछ जगहों में सतत षिक्षा केन्द्र संचालित करना चाहता है, जिसमें असाक्षर लोगों को साक्षर करने के साथ–साथ नई चुनौतियों से एक व्यक्ति सामूहिक रूप से कैसे निपटे, इस समय संविंधान बचाओं, देष बचाओं के साथ–साथ षिक्षा, स्वास्थ्य, वैज्ञानिक जागरूकता, पर्यावरण के चुनौतियों पर समझ बनाने के लिए जन विज्ञान आंदोलन को सतत षिक्षा केन्द्र को नागरिक षिक्षा केन्द्र के रूप में संचालित करना पड़ेगा।

उपरोक्त विशय पर बातचीत करने के पूर्व हम सभी को अतीत में जाना होगा। हम सभी ने जो feyt|ydj lk{kjrk vfHk;ku d| nkjku dke fd;k Fkk mu |ugj| bfrgkl dk ;kn djuk gkxkA हम सभी यह जानते हैं कि भारत ज्ञान विज्ञान समिति अपना सफर इस देष में साक्षरता आंदोलन की षुरूआत से की है। एर्नाकुलम मॉडल जो भारत ज्ञान विज्ञान समिति की सहयोगी संगठन केरल षास्त्र साहित्य परिशद की देन है। इन्हीं अर्जित अनुभव के आधार पर साक्षरता आंदोलन का षुरूआत पूरे देष में किया गया। भारत ज्ञान विज्ञान समिति साक्षरता अभियान में वातावरण निर्माण, प्रषिक्षण, निगराणी एवं मूल्यांकन के साथ–साथ कुछ जिलों में जिला साक्षरता समिति में पूर्ण नेतृत्व भी किया है। साक्षरता आंदोलन के परिणाम स्वरूप उपजी जन जागरुकता के तहत देष में कई जगहों जैसे– आंध्रप्रदेष के नेल्लौर जिला में षराब बंदी आंदोलन, तमिलनाडु के पुद्दुकोट्टई में पत्थर तोड़ने वाले महिलाओं का जन लामबंदी, मदुरई का पुस्तकालय आंदोलन, कन्याकुमारी में स्वयं सहायता समूह मलर का निर्माण, झारखण्ड के धनबाद जिला में कोयला माफिया के विरूद्ध आंदोलन, हरियाणा के पानीपीत की चौथी लड़ाई, हरियाणा के अन्य जिलों जिन्द, हिसार, करनाल, कैथल में साक्षरता अभियान और बिहार के मधेपुरा में नवयुवतियों का सषक्तिकरण जैसे परिणाम ज्वलंत उदाहरण है। इसी तरह देष के अनेक जिलों में साक्षरता अभियान जन अभियान के साथ संघर्श एवं

रचना का माध्यम बना। लाखों स्वयंसेवक इस दूसरी आजादी की लड़ाई में स्वतः सम्मिलित हुए। संगठन को इस ऐतिहासिक कार्य में महत्वपूर्ण भूमिका निभाने का गौरव प्राप्त है। इस आंदोलन की देन है कि वर्श 1991 से वर्श 2001 के बीच साक्षरता दर में एक दषकीय वृद्धि सबसे ज्यादा हुई।

वर्श 1990 के साक्षरता आंदोलन, वर्श 1995 से उत्तर साक्षरता अभियान, सतत् षिक्षा कार्यक्रम तीनों में हम लोगों ने अपनी भागीदारी निभाया।

हम लोगों ने साक्षरता अभियान के दौरान कई षिक्षा के विविध आयामों को भी जोड़ने काम किया है। मसलन, सीखने का मजा, अंतरिक्ष की सैर कार्यक्रम जैसे अनुभव को बाद के दिनों में सर्वषिक्षा अभियान ने अपना दर्षिटपथ में जोड़ा। उत्तर साक्षरता अभियान का जनवाचन अभियान काफी महत्वपूर्ण रहा है। जिन्हें आप सभी 'जनवाचन आंदोलन' से भलि–भांति परिचित हैं। नवसाक्षरों एवं ग्रामीण पाठकों के लिए बीजीवीएस की राश्ट्रीय केन्द्र तथा प्रादेषिक केन्द्र द्वारा जनवाचन आंदोलन के तहत बड़े पैमाने पर जनवाचन पुस्तकमाला कई भाशाओं प्रकाषित किया गया जो आज भी अति महत्वपूर्ण है।

भारत ज्ञान विज्ञान समिति के नेतष्त्व में उत्तर साक्षरता के समय हजारों गांवों में स्वास्थ्य कार्यकर्ता तैयार किया गया जिसके अनुभव के आधर पर राश्ट्रीय ग्रामीण स्वास्थ्य मिषन की स्थापना हुई।

मध्यान्ह भोजन को स्कूलों में लागू कराने के लिए साक्षरता अभियान के साथियों ने जन दबाब बनाया।

सतत षिक्षा कार्यक्रम जब देष में षुरू हुआ तो हम लोग ने मॉडल के तौर पर देष के कई स्थानों में बिहार, झारखण्ड, उड़ीसा, उत्तर प्रदेष के चुने हुए क्षेत्रों में मॉडल बनाने का कोषिष किया।

षुरूआती समय में राश्ट्रीय साक्षरता मिषन में नीति निर्माण के साथ–साथ हम अपने कामों को जमीन पर भी उतार रहे थे। धीरे–धीरे राजनीतिक परिस्थिति में बदलाव के कारण राश्ट्रीय साक्षरता मिषन में हमारा हस्तक्षेप घटता गया। राश्ट्रीय साक्षरता मिषन अफसरषाही केन्द्रित हो गया था।

जब लोगों के बीच हम साक्षरता को लेकर काम कर रहे थे। बड़े पैमाने पर नवसाक्षरों के बीच सवाल करने का योग्यता उत्पन्न हो रहा था।

हम सन् 2000 के बाद से साक्षरता अभियान पर गंभीरता से सोच नहीं पाए। साक्षरता अभियान में लगभग एक करोड़ 50 लाख स्वयंसेवक आए इतने बड़े पैमाने पर स्वयंसेवकों को जोड़कर रखना एक चुनौती था। उन्हें लेकर आगे काम बढ़ाना भी कठिन था। प्रगतिषील आंदोलन हिन्दी क्षेत्र में साक्षरता अभियान का सही रूप से मूल्यांकन करने में असमर्थ रहा।

साक्षरता अभियान धीरे–धीरे प्रषासकीय चंगुल में फंसता गया। हमारे संगठन को धीरे–धीरे हासिये पर धकेला गया। लेकिन आज भी हमारे साथी निरंतर इस कार्य में निश्ठा एवं ईमानदारी के साथ लगे हुए हैं। हम साथियों के बीच वर्तमान स्थिति को लेकर लगातार विचार–विमर्ष चल रहा है।

वर्श 2009 में साक्षरता अभियान का स्वरूप में बदलाव आने लगा। 11वीं–12वीं पंचवर्शीय योजना अंतर्गत 8 सितम्बर 2009 से पूरे देष में ^lk{kj Hkkjr dk;Øe* का षुरूआत किया गया। इस कार्यक्रम का मूल उद्देष्य है, महिला, अनुसूचित जाति, अनुसूचित जन–जाति और पिछड़ी जाति में भी साक्षरता कार्यक्रम के साथ–साथ उनका कौषल विकास करना।

लेकिन ^lk{kj Hkkjr dk;Øe* स्वयंसेवक आधरित न होकर प्रत्येक पंचायत में दो प्रेरक मानदेय आधरित हो गया।

परन्तु सच यही है कि आज भी पढ़ाने का कार्य स्वयंसेवक आधरित ही है। साक्षर भारत जन अभियान से जन संस्थान की ओर बढ़ता हुआ एक प्रयास था। आज जब हम साक्षरता आंदोलन पर बात कर रहे हैं तो साक्षर भारत कार्यक्रम पूर्ण रूप से बन्द हो चुका है। राज्य संसाध न केन्द्र बन्द हो चुके हैं।

पढ़ बढ़े कार्यक्रम में सरकार इस कार्यक्रम को स्कूली षिक्षा के साथ जोड़ दिया है। अब यह काम स्कूल के छात्र षिक्षकों के नेतष्त्व में करेंगे।

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हम पंचायतों में जहां हमारी संगठन सषक्त है वहां पर नागरिक षिक्षा केन्द्र का स्थापना कर सकते हैं। आजादी के 75 वर्श पूरे होने उपलक्ष में हमने नारा दिया है ''संविधान पढ़ो देष गढ़ो'' इस केन्द्र पर हम गतिविधि आधारित बना सकते हैं। हम असाक्षर मनरेगा मजदूरों को माता समिति के महिला साथियों को और गांव में उपस्थित असाक्षरों को साक्षर करने का काम कर सकते हैं।

हिंदी क्षेत्र में आज भी इन जिलों में बड़े पैमाने पर साक्षरता के साथी ज्ञान विज्ञान आंदोलन के साथ जुड़े हुए हैं।

ikUr dk uke	ftyk dk uke	ikUr dk uke	ftyk dk uke
1. fcgkj	1. मधेपुरा 2. सहरसा 3. भभुआ 4. किषनगंज 5. सीतामढ़ी 6. षिवहर 7. लक्खीसराय	2- >kj[kM	1. धनबाद 2. पलामु 3. लातेहार 4. कोडरमा 5. साहेबगंज 6. दुमका 7. बोकारो

	8. कटिहार 9. अररिया 10. मधुबनी		8. गढ़वा 9. चतरा 10. गिरीडीह
3- mÙkj iin'k	1. मेरठ 2. कुषीनगर 3. पीलीभींत 4. बाराबंकी 5. बिजनौर 6. गोरखपुर 7. बागपत 8. मुरादाबाद 9. अलीगढ़	4- jktLFkku	1. बारां 2. अलवर 3. धैलपुर 4. बुन्दी 5. पाली
5- mÙkjk[k.M	1. हरिद्वार 2. उधमसिंह नगर 3. बागेष्वर	6- mMhlk	1. सुन्दर गढ़ 2. बलागीर 3. कालाहांड़ी
8- fgekpy iin'k	1. चम्बा	9- iitkc	1. पफरीदकोट
10 gfj;k.kk	1. जिन्द 2. हिसार 3. करनाल 4. कैथल	11- eè; iin'k	1. भिण्ड 2. कटनी

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हरियाणा एवं हिमाचल प्रदेष में राज्य संसाधन केन्द्र भारत ज्ञान विज्ञान समिति की इकाई के रूप में कार्य कर रहा था। दोनों ने अपने अपने राज्यों में साक्षर भारत कार्यक्रम में अपनी पहचान राश्ट्रीय स्तर पर बनाया था उसके साथ–साथ असम में राज्य संसाधन केन्द्र हमारे साथ आज भी है, सरकार द्वारा बन्द कर दिए जाने के बाद भी आज भी वह सक्रिय है। क्या इन सारे राज्य संसाधन केन्द्र के सहयोग से

हम नागरिक षिक्षा कार्यक्रम को पुनः एक गति दे सकते हैं? साक्षर भारत कार्यक्रम में हम एक मजबूत हस्तक्षेप कर सकते हैं?

याद कीजिए साक्षरता अभियान के दौरान भारत ज्ञान विज्ञान समिति के कई तरह के प्रषिक्षण सामग्रियों का निर्माण किया गयाा था। जिनका इस्तेमाल हम मुख्य स्रोत व्यक्ति के प्रषिक्षण के साथ–साथ स्वयं सेवक प्रषिक्षण भी करते थे।

परंतु, वर्तमान के कार्यक्रमों से संबंधित सामग्रियों का हमारे पास अभाव है। राज्य संसाधन केन्द्र के साथ मिलकर हम ऐसे सामग्रियों का निर्माण कर सकते हैं।

समिति ने 'जनवाचन आंदोलन' के तहत काफी संख्या में किताबें का प्रकाषन किया है, जिसे हम प्रत्येक नागरिक षिक्षा केन्द्र में भेज सकते हैं।

नागरिक षिक्षा केन्द्र का मुख्य उद्देष्य महिलाओं, अल्पसंख्यकों, अनुसूचित जाति, अनुसूचित जनजाति के बीच साक्षरता कार्य को ले जाना है।

- जहां हम हैं उन जिलों में अच्छे ढंग से काम कर नीचे से उपर दबाव बना सकते हैं।
- आज के पढ़ना–लिखना कार्यक्रम पर लोगों को समझ बनाने के लिए प्रत्येक राज्य में राज्य स्तरीय कार्यषाला, जहां हम राज्य स्रोत व्यक्ति तैयार कर सकते हैं।
- जिला स्तर पर जिला स्रोत व्यक्ति समूह का गठन एवं उसका प्रषिक्षण द्वारा प्रषिक्षित किया जा सकता है।
- 50 जिलों के प्रत्येक प्रखंडों में दक्ष स्रोत व्यक्ति का चुनाव करने के बाद दक्ष स्रोत व्यकित का समूह गठन किया जा सकता है।

- इन 50 जिलों के प्रखंडों एवं पंचायतों में हमारे साथी किसी न किसी भूमिका में हैं जरूरत है उनको सांगठनिक प्रषिक्षण देकर उन्हें संगठन में जोड़कर रखने का।
- नागरिक षिक्षा केन्द्र पंचायत स्तर के गतिविधि का केन्द्र कैसे बने? प्रत्येक गांव में चर्चा मंडल का निर्माण, षिक्षा अधिकार कानून को जोड़कर बच्चों को स्कूल भेजने का कार्यक्रम, मनरेगा मजदूरों को पढ़ाई एवं मजूदर मंच का गठन, स्वयं सहायता समूह से जुड़ी हुई महिलाओं की पढ़ाई, वंचित समुदाय का आवाज बनना, लोक षिक्षा केन्द्र नागरिक षिक्षण केन्द्र के रूप में कैसे परिवर्तित हो जाए इन सभी पर सोचने की जरूरत है।

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Threat to Indian Education

Kumar Rana

Many thanks for offering me the opportunity to underscore one of the most important hindrances before India's developmental prospect. The problem relates to our state of education, which is facing a huge threat in terms of equitable delivery, and is threatening the country's democratic and developmental future. The problem, I would argue, is rooted in class division and has caused to widen the same class division. After seven decades of independence one fourth of Indian population is deprived of literacy – among the women it is even higher. Aside from the gender division in literacy, we have a huge gap between different social and economic communities. Instead of making education a case for collective responsibility, the educational prospect of individuals has been made an individual responsibility. While expansion of school system made the access somewhat easy, the core concern of quality of education remained unchanged. Universal access in itself, is not the guarantee of equal opportunity of learning for all. The main challenge is the universalisation of learning achievement in order to eliminate exclusion of many children owing to their historically constructed disadvantaged background – being poor and low caste; belonging to minority religious, linguistic and cultural groups; and being girls. The governments – both at the centre and in many states – are taking the path of educating the people, by deciding what is to be taught, and who to be given the opportunities of learning. A look at the new education policy

2020, makes it amply clear that while the state aims at educating its "subjects" it charts out path for deepening the exclusion in the field of education – by encouraging the private players. Back in 1970, Amartya Sen diagnosed that "[p]ublic policy on Indian education has been one of drift – a drift in response to the wind from whichever direction it might be blowing." The wind is still blowing from the powerful, but, one can see very well a counter wind blowing from millions of parents eager to ensure education for their children. Therefore, the larger society, especially teachers and educational activists, have a dual role to play: delivering as much as possible and also make the government deliver.

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Messages From CoP-16 of CBD to Forest Cover of India

Tapan Mishra
PBVM

This CBD-16 (Cali, Colombia, 21 October-1 November) was not closed but was suspended. We must wait for CoP-16.2 for another futile exercise. In recent years, "biodiversity offsets" and "credits" being seen as one of the keyways to finance nature conservation and to support global biodiversity goals. The hidden agenda of CoP-16 (CBD) was mostly to ensure biodiversity offsets or compensate conservation efforts with money.

What are biodiversity offsets?

Biodiversity offsets are defined as conservation activities intended to compensate for the lasting impacts of development on species and ecosystems.

How will benefit-sharing work?

Previously it was only use of accessed biological resources, their by-products, innovations and practices, now it is digital sequence information (DSI) on genetic sources. The benefits need to be shared with the community.

2019 IPBES (Intergovernmental Platform on Biodiversity and Ecosystem Services) says-

"Contributions of indigenous peoples and local communities to the enhancement and maintenance of wild

and domesticated biodiversity and landscapes are noteworthy".

In India BioD Act Amendment Bill was passed in both the houses by voice vote without allowing the members to discuss the pros and cons of the amendment. These are:

(1) Reduced regulatory burden and (2) Decriminalization of offenses**.**

Forests

UNFCCC is mostly discussing conserving forests for carbon offset ignoring its Ecosystem services. The FAO says that protecting primary forests has been overlooked in international policy frameworks. Carbon Trading mechanisms focus on carbon fluxes between Earth's carbon pools rather than stocks.

Real Picture of Forest Cover in India

In India Climate change has started to show its impact on Indian forest cover. A study found that more than two-thirds of India's forested grids are likely to change by 2100.

Forest Survey of India claims that India's total forest and tree cover has increased to 25.17 per cent in 2023 from 24.62 per cent since 2021 (ISFR, 2023). If advancement in this pace goes on we will reach 33% forest target soon in pen and paper. (Jokes Apart)

UNFCCC has pointed out that, in India, 18 percent of this forest cover loss occurred in the country's moist primary forests. The State of World's Forest Report' by FAO (2020) states that India's forest cover is 72.16mh and not 80.9mh as reported by FSI.

Recently a *Suo-motu* case by NGT was admitted on exaggeration of forest cover in India taking cognisance of World Resource Institute. WRI states that forest cover of India between 2000 and 2023 at least 2.33million hectares of natural forest has been denuded.

Transformative Change: **A Ray of Hope-** IPBES Report published in 18 Dec, 2024 says that between 2012 to 2022 more than 2000 defenders including journalists, were killed for opposing social mobilisations were successful in preventing these losses.

- Nearly 40 per cent of these mobilisations occurred in regions identified as top conservation priorities for 1,391 species.
- Approximately 19 per cent of social mobilisations led to transformative outcomes, such as the cancellation or suspension of environmentally harmful activities.

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Present and Future of Integrated Farming in Kerala

Dr. Raseena N R

KSSP

Integrated farming in Kerala, a densely populated state with limited arable land, offers a sustainable solution to the challenges of modern agriculture. By combining multiple farming practices, integrated farming enhances resource use efficiency, minimizes waste, and ensures a balanced ecological approach to food production. Given Kerala's unique topography, high population density, and small landholding patterns, integrated systems that blend crop cultivation, livestock rearing, aquaculture, and agroforestry have significant potential for boosting agricultural productivity and sustainability.

Currently, integrated farming practices in Kerala include traditional mixed cropping systems, the integration of livestock with crops, and homestead farming. These approaches not only ensure diversified income for farmers but also improve soil fertility, water management, and biodiversity. The adoption of modern practices such as aquaponics and biofloc fish farming is gaining momentum, supported by government initiatives and technological advancements. However, challenges persist, including fragmented landholdings, the high cost of inputs, and a lack of awareness among farmers about advanced techniques.

The future of integrated farming in Kerala lies in adopting regenerative agricultural practices tailored to its unique socio-

ecological context. Regenerative techniques such as organic farming, reduced tillage, crop rotation, and agroforestry can be integrated into existing systems to enhance soil health, carbon sequestration, and biodiversity. These methods are particularly critical in a state where land use pressures and population density necessitate efficient and sustainable farming practices.

Non-Governmental Organizations (NGOs) such as KSSP play a vital role in advancing integrated farming in Kerala. They engage in capacity building, farmer training programs, and awareness campaigns to disseminate knowledge about innovative techniques. NGOs also act as facilitators, connecting farmers with financial resources, government schemes, and technical expertise. Through community-based initiatives, they promote the adoption of climate-resilient practices and ensure that small and marginal farmers are included in sustainable agricultural development.

Policy interventions are critical to scaling integrated farming in Kerala. Government support through subsidies, low-interest loans, and incentives for sustainable practices can drive adoption. Research institutes and universities can contribute by developing region-specific technologies and climate-resilient crop varieties. Furthermore, digital platforms and precision agriculture tools can empower farmers with real-time data, market access, and guidance.

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Pollinators in Agroecology: Implications for Indian Agriculture

Dr. Raseena N R

KSSP

Pollinators are critical to global and Indian agriculture, with over 87% of flowering plant species leading global food crops depending on them for seed and fruit production. In India, where agriculture forms the backbone of the economy, pollinators such as bees, butterflies, birds, and bats play a pivotal role in enhancing crop yield, improving food quality, and ensuring ecosystem stability. However, the alarming decline in pollinator populations poses a significant threat to biodiversity conservation, agricultural productivity, and food security.

Understanding the interactions between pollinators and crops is crucial for implementing agroecological practices that sustain both agricultural systems and natural ecosystems. In Indian agroecosystems, pollinators are indispensable for major crops like fruits, vegetables, spices, and oilseeds. For instance, crops like mango, cardamom, mustard, and sunflower rely heavily on pollinators for successful fertilization. A deeper understanding of crop-specific pollinators can aid in tailoring strategies to enhance pollination services, leading to improved productivity and biodiversity conservation. The decline in pollinator populations in India is driven by habitat loss, excessive pesticide use, monoculture farming, and climate change. Addressing these challenges requires a multi-pronged

approach. Sustainable agricultural practices, such as crop diversification, integrated pest management (IPM), and organic farming, can help create pollinator-friendly habitats. Reducing pesticide use and adopting eco-friendly alternatives are critical for mitigating pollinator mortality. The adverse effects of managed bees on wild bee populations must be minimized by balancing their use and conserving wild pollinators.

Developing and implementing integrated pollinator management strategies, including the preservation of natural habitats, is essential. Non-lethal pollinator monitoring methods should be promoted to collect baseline data for effective conservation planning. Additionally, climate-resilient farming practices, such as creating microclimates within farms and restoring pollinator corridors, are vital to mitigating the negative impacts of climate change on pollinators. Educating farmers about the economic benefits of pollinators and involving them in community-based conservation programs can drive grassroots-level change. Policies supporting pollinator-friendly farming, incentivizing biodiversity preservation, and enhancing research on pollinator-crop interactions should be prioritized. Expanding public-private partnerships to fund pollinator-friendly initiatives can amplify impact. By protecting pollinators and their habitats, India can ensure resilient food systems, bolster biodiversity, and secure livelihoods for its farming communities.

Perspectives on Development of West Bengal

Achin Chakraborty

Professor of Economics and Former Director
Institute of Development Studies Kolkata

Going beyond the popular narratives that are often based on perception rather than hard fact, we make an attempt to chart out the development trajectory of West Bengal (WB) in the past three decades based on available data. The popular perception is largely shaped by the observed secular decline in the share of WB in total industrial output of India since the 1960s, with no apparent sign of turnaround in the coming years. This hard fact looms large and overwhelms the popular view about the economy of WB, even though to assess the growth (or stagnation) of the economy comprehensively one should ideally look at the trend in the per capita state domestic product (SDP) of which industrial output is one of the three major components, the other two being agriculture and services. One would like to go even beyond the growth in per capita SDP and take a multidimensional approach to assessing development, as defined by Amartya Sen in terms of expansion of human capabilities.

The growth rate of the economy of WB was higher than the all-India average in the 1990s. It fell below the all-India average in the past two decades. The state's growth has marginally decelerated in the last decade relative to the previous decade. But the same is true of the all-India growth rate as the country experienced economic slowdown since

2016, even before the impact of Covid-19 set in. The picture was somewhat opposite for agriculture. After a few decades of stagnation, agriculture picked up in the state since the 1980s. Even in the past decade WB's rate of growth of agriculture exceeded that of India. However, the state's share in India's net value added in industry and total workers witnessed a secular decline, indicating a relative slowdown of the state's industrial sector vis-à-vis that of India. Irrespective of the political regimes in the state, the industrial decline has continued unabated.

One of the important features of the recent economic dynamics of WB is that in spite of a below-average growth in per capita SDP, the consumption expenditure in rural areas has grown faster in WB between 2011 and 2018, which has also been reflected in the decline in rural poverty. One can speculate that this is due to the above-average growth in agriculture as well as various pro-poor transfers. This brings us to the contestation of two opposing views about various cash or in-kind transfers. Critiques argue that transfers, what they often call 'dole' or 'freebies', are populist, and not good for the long-term growth of the economy. Populism is usually associated with short-termism in policies. However, welfare states anywhere in the world do have a variety of conditional and unconditional cash transfer programmes. Whether these programmes stymie the economy or facilitate growth in the long run is a matter to be analysed with logic and evidence, not presumed. One can reasonably argue that transfers must not be at the cost of investment in human development. The status of human development in WB is rather mixed. While some basic indicators of health, such as the death rate or infant mortality rate, show above average achievements, the indicators of education lag behind most of the states in India.

Neoliberalisation of education, public campuses and changing politics

Paramita Chakraborty

Jadavpur University

The talk will examine the gender implications of the neoliberal agenda being pushed through Commissions, policies and legislations in the Indian education system in the last decade. While noting how neoliberalisation is slowly hollowing out the substance of the empowering potential of education, leaving only formal articulations of a democratic purpose, the talk will also ubderline how there is also a pushback to this agenda. As our public universities, the last bastions of quality and inclusive education, are being systematically starved out of existence to make way for private education, students, particularly women students are fighting back. While many of these mobilisations do not appear to be recognisably anti neoliberal movements, they are in fact redefining the nature of student politics.

Problems faced by women in India: Need for democracy and rational thinking in society

S. Krishnaswamy

Madurai Kamraj University

Entrenched patriarchal and caste-based discrimination perpetuates the marginalization of women and girls, especially those from rural backgrounds, in India. Rigid social pressures leading to school dropouts, inadequate menstruation health, early marriage, childbirth, and societal expectation to produce male children are some problems faced by girls. In addition, women, importantly from marginalized sections, face caste and gender discrimination in educational institutions and limited access to higher studies. There is the dwindling presence of women in higher education and paid employment. Tokenism in appointments and elections not only further perpetuates but also masks the inequality. The current Hindutva ideology, which emphasizes women's domestic roles, has only exacerbated these issues.

The root problems are the lack of democracy in daily life, socio-economic inequality, and insufficient political and social pressure for change.

Inculcating scientific temper, promoting social change, and achieving economic freedom are essential for transforming the lives of women in India.

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Women in Science – Why do we need a discussion?

Anindita Bhadra

Diversity, equity, inclusivity (DEI), is a much used phrase in today's world. The global academic community has, in the last decade, become more aware of the need for attaining DEI and various initiatives are evident in conferences, academic evaluations, panels, etc., to achieve DEI goals. "Women in Science" is another such phrase that comes up often in discussions in various academic contexts. The community of scientists have come a long way since the times of Marie Curie, when a woman scientist was a sore thumb, sticking out among a group of men. In India, only 13.5% of professors across institutions are women, with only a few institutions being headed by women directors or vice chancellors. The system is a terribly leaky pipeline, with women comprising of nearly 43% of STEM graduates, and dropping out of the race as they climb up the academic ladder. The problems that women face are multifaceted. On the one hand, society has become more and more open to educating the girl child, leading to a large number of girls in STEM at the graduation level. However, the pressure to marry, have a family, take up responsibility of the home and hearth remain the problem of women alone in a large part of our society. The problem is compounded as many women feel torn between their urge to be mothers and to build a career. The critical window for building a career in STEM, or for that matter, in any field, coincides with the biologically active period in a woman's life when she is the most fit to

be a mother. Furthermore, many women are victims of the "two-body problem"; both husband and wife are equally educated and trained, but when they seek jobs, they find it difficult to be together, and the woman often chooses her family over her career. Beyond these biological and social issues, is the elephant in the room, of conscious as well as unconscious bias. There is ample evidence of this, as male-biased committees evaluate candidates, and their biases score the women lower than the men. Women are asked how they would balance life and work, if they have children, but men never face these questions. Women fall back in the race from their male colleagues if they take child care leave, and this is not appreciated, rather frowned upon. Women need to keep juggling responsibilities at work and at home and are appreciated for being incarnations of "Durga". The question is not if someone is a superwoman, but why anyone needs to be one. I think the very fact that we need to have discussions on women in science, that we need to keep asking if we are doing enough, that we need to keep reminding the world that this is an important issue, and that it is typically women and a handful of men who even bother about these discussions, is enough to tell us that we have not done well in providing women an equal footing in the academic scene to men. We have a long way to go before we, as a community can say that we just have people in science.

The tradition of Mathematics and Astronomy in India

Somak Raychaudhury

Vice Chancellor
Ashoka University

The study of India's heritage in the development of the basic sciences reveals fundamental contributions in the thought and practice of a wide range of fields, particularly in mathematics and astronomy, metallurgy, and in medicine and healing, and I am happy to say these traditions continue in modern India. The development of mathematical formalisms were often motivated by problems in Astrology or Astronomy, and these were connected in the work of many, such as Aryabhata, Brahmagupta, Varamihira, all the way leading up to the achievements of Bhaskaracharya and Madhava. Elements of the natural sciences were developed in conjunction with these principles. I will give an overview of the major achievements of the Indian tradition in Mathematics and Astronomy.

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Kisan Mazdoor Commission (KMC): Agenda 2024

An Initiative by NATION FOR FARMERS

INSAF

Introduction

Eighty three per cent of the Union Government budget for agriculture in 2024 is allocated for individual beneficiary-based schemes of income support. A classic example is the Rs. 6,000 annually given to landed farmer households under the Kisan Samman Nidhi Yojana. Tenant cultivators constituting close to forty per cent of all farmers do not and will not receive income support. The Modi government has drastically reduced support measures that impact the whole sector. An overwhelming share of investments in fixed assets in agriculture now comes from the farmer households themselves –82%. Public sector investment is merely15%.

The private corporate sector accounts for just 3 per cent of investments in agriculture. Yet, the government is rapidly transferring assets to it from the public sector. The control of public assets created for agricultural education, research and extension, production and distribution of farm inputs is the latest development. Critically, agricultural credit, electricity generation, transmission and distribution, are now under the control of big business. Procurement, agro processing, food processing, value addition in agro-produce are all moving in the direction of private control. Private corporations care for neither mother earth nor farmers.

Corporates promote one-size-fits-all solutions. Adverse impacts of these solutions are making farming unviable. Corporate solutions harm agro-ecosystem services namely soil health, water quality, crop diversity, animal diversity, and natural predator and pollinator populations. The Indian Council Agricultural Research has entered partnerships with Bayer, Amazon and other giant corporations for agricultural research and extension services. Corporate capture of agriculture means a potential hijack of the small farmer-centric mandate. Public sector research programs will now directly promote corporate agendas.

Red carpet treatment for private corporations in the Experimental Field Stations for research and extension is the latest development. Krishi Vigyan Kendras (KVKs)-– agricultural extension centres that link and give farmers access to research and training – will also come under their control. Corporates have been given contracts for the digitalization of agriculture. Private corporations will own the data collected from the fields of farmers relating to crops and soil health. This increasing control will enable them further lock farmers into dependence on their expensive agricultural inputs.

The Modi Government is facilitating corporate control over the supply of inputs and knowledge. The Pradhan Mantri Samriddhi Kisan Kendras (PMKSKs) – meant to be 'One-Stop shops' for farm related inputs and services –will largely be run by commission agents controlled by agri-input suppliers. Solutions pushed by agribusiness will impact negatively on food quality and prices. Such consequences are now observable for all types of farmers across all agroecological regions.

The agricultural and rural workers are the worst hit; the deepening agrarian crisis coupled with the use of labour displacing technology has reduced the availability of work to minimal level resulting in underemployment and unemployment for rural labour. Lakhs of small and marginal farmers have been forced to sell their land. Artisans have also lost their work and many are forced to work as agricultural labourers. Currently, the share of cultivators is 45.2 per cent, and that of agricultural labourers has risen to 55 per cent. The real wages of agricultural and rural labourers has not increased and are stagnant.

Most of the agricultural workers are Dalits and tribals who are not only economically exploited but are also socially oppressed denied of access to land and other resources such as water, fodder and fuel, and are forced to depend on social welfare measures. Dalits and Adivasis have been forced into casual work and in many cases displaced due to diversion of land grabs and lands for industry and urbanization. These sections perform significant proportion of the farm work, and the work within fisheries, animal husbandry and forest related occupations.

The predominance of women across vulnerable social groups highlights the discriminatory tendencies within rural society and economy. The participation of women in paid agricultural work has been declining; their dependence on agriculture has not decreased. Many farmers including agricultural labourers are dying by suicide. Youth are exiting agriculture. Corporates have neither an interest nor the capacity to offer region-specific solutions. They centralize knowledge to maximize surplus. Corporates treat nature as a source of rent. And also utilize market power and control as a source of rent.

Corporate capture of agriculture means, among other things, continued import of pulses, oilseeds and wheat from the US, Australia, Canada, and *virtual* exports of land, water and cheap labour from India to serve them in respect of their exotic food requirements which they are not in position to grow. This division of labour would seriously threaten the sustenance, even survival, of small and marginal farmers and rural labour. Bayer has recruited large landowners to sell cattle feed and other products to small farmers. Large landowners with the help of private corporations are taking over procurement of milk from the small farmers for Nestle.

Amul, a cooperative of Gujarat farmers, has chosen to replace its cooperative structure with a corporate structure. The Union Government seeks to introduce the corporate model in the cooperative sector. The launch of the Grain Storage Project in the Cooperative Sector,' through Primary Agricultural Credit Societies (PACS) is also an attempt to corporatize the farmers' cooperatives. The implementation of this project is taking place through convergence of Agriculture Infrastructure Fund (AIF) and Agriculture Marketing Infrastructure (AMI). , Subsidies and interest subvention benefits for undertaking infrastructure development will be restricted to the participating PACS. Attempt is to bring the corporates into the cooperative sector. Corporates are entering through the backdoor under the guise of new schemes for agricultural infrastructure development, credit and cooperative sector.

Small holders need to be actively supported by Union and State governments through the cooperative structure. Corporate approach means ultimately death knell for the small holder agriculture. The challenge of climate change

demands the adoption of integrated farming systems approach that will considerably reduce the risk of small and marginal farmers. We need to reduce negative impacts of excessive use of inputs, particularly inputs of a chemical nature. We need to encourage recycling and improve input and resource use efficiency. Ecologically integrated farm inputs and resources are the need of the hour. Kisans need support from rural labour to adopt the methods of sustainable farming.

The Modi government seeks to transfer control of common lands to the corporate sector for solar installations, wind power and bio-fuel production. Common land resources need to be protected for the benefit of food production and soil health. Water bodies, grazing lands, trees and livestock need to be conserved. Only kisans in alliance with rural labour can rationalise and reduce the use of costly external inputs. Corporate power can be challenged in production by farmers and labour with the public sector on their side. An alternate win-win agenda for farmers, rural labour, self-reliant agriculture and local value addition is desirable. It will only be possible with science and bank finance standing on their side rather than on the side of the private corporate sector.

The entire set up has been imposed on India by Western corporations with their governments acting through the toxic ecosystem made possible by the WTO. Farmer protests across the world are linked in some way with the devastation that the transnational corporate sector subjects farmers to everywhere. We call upon the Government of India to withdraw agriculture from the purview of the WTO. **Simply put: Get the WTO out of agriculture. We cannot allow the**

forces of corporate globalization to swallow agriculture and farmers. A world without agriculture and farmers is neither feasible nor desirable.

The Kisan Andolan at the gates of Delhi from November 2020 to December 2021 was a historic turning point. For the first time ever, the farmers of the country were openly confronting corporate power. The discredited three farm laws were drafted not in parliament but in corporate board rooms. A defeated government cannot be allowed to reintroduce these laws through the backdoor.

With the formation of Kisan Mazdoor Commission (KMC) the "Nation for Farmers" platform having members from across the country seeks to mobilize the support of the Indian people, scientists and state governments for much needed legislative action. The Union Government and State Governments need to stand with the farmers, rural labour, consumers, women and youth of rural areas. Society as a whole needs to rapidly act against the policy path promoting corporate control of agriculture.

India needs farmers to practice agriculture to survive. India cannot do that under the present WTO-corporate-driven framework. Farming under big business control means far fewer jobs for youth and decimation of farming households. With this in view, the KMC secretariat has drafted ***Agenda 2024*** to mobilize support within political parties against corporate penetration into the industries and institutions involved with the supply of all types of agricultural input(s), knowledge production, dissemination and utilization activity and the processing of produce and products.

The KMC is committed to mobilising support for the Farmers, Agricultural Workers, and Fisher folk, Livestock Farmers, Pastoralists, Dalits, Adivasis, Women and Rural

Youth. They are worse impacted by the rapidly deepening agrarian crisis. Given below is the draft agenda framed by the Kisan Mazdoor Commission (KMC) secretariat for a wider public deliberation.

KMC Draft Agenda 2024

KMC seeks support for meeting the demands listed below:

1. Land rights related demands:

a. Land reforms remain an unfinished agenda. Worse still, there has been extensive encroachment of public lands, including commons and unregulated diversion of cultivable land for non-agricultural and speculative purposes. There is an urgent need of systematic land survey in every state and clear land use policy. Legislate homesteads for the rural poor and grant land rights to landless for cultivation, kitchen gardens, and backyard poultry, and group farming. Place all above-ceiling land presently held by public or private entities under control of the state agricultural department – the redistribution to the landless. For example, the excess land held by CIDCOs, state industrial estates, or Railways, or those sliding into corporate control be redistributed

b. Tenant Rights: Create a register of tenants and provide smallholders with secure tenancy. Tenant farmers must be made eligible for all schemes applicable to land-owning farmers. That needs legislative and statutory support.

c. Provide protection against creation of land banks and guarantee protection against transfer of lands in rural areas to the corporates in the name of acquisition for industrial, renewable energy and urban development.

d. Provide in the law for co-benefits in the form of a share in revenue/rents / jobs from enterprises built on the lands acquired from farmers.

e. Recognise the rights and entitlements of women farmers and grant them land rights.

2. Guarantee right based social protection measures:

a. Expand and provide for a universal public food distribution system for the delivery of cereals and nutri-cereals, pulses, sugar and oils without linking it to Aadhar or biometric identification and without shifting to direct cash transfer;

b. The unbridled expansion of privatization of education and health is a serious drain on the meagre resources of farming households. Guarantee Universal healthcare and quality education,

c. Ensure job security and minimum wage by extending the number of workdays from 100 to 200 workdays, implement existing provision of 100 days under MGNREGA without creating hurdles, introduce a provision of 100 days of labour support for the SC, ST, and other small and marginal farmers for land development, integrated farming systems (IFS) including natural farming, thus assuring 200 days of rural employment @ Rs. 800 wage per day.

d. Introduce Urban Employment Guarantee Act and enact old age pensions;

e. Provide childcare and crèche facilities in agricultural workspaces.

f. Provide for separate courts for protection against caste, ethnic, religious, gender based oppression. Ensure the

access of socially marginalised groups to land and water;

3. Commons and local self-government related demands:

a. Legally recognise the rights of the poor, landless, Dalits and women to village / public commons.

b. Provide public assistance for the rejuvenation of common property resources. Grant the right to pool those resources for value addition and formation of local collectives in the way of Kisan Mazdoor Cooperatives / group enterprises (KMCs),

c. Ensure effective implementation of forest rights act (FRA), expand and recognise community land rights under FRA, roll back amendments to Forest Conservation Act ensure access to forest produce for all forest dwellers, amend Indian Forest Act 1927 to provide for social control of participation in the governance of forests. That would include the activities related to agriculture and take steps to prevent the evolving human-wildlife conflict detrimental to the lives and livelihoods of people settled around the forest areas;

d. Reclassify wastelands and grasslands as essential ecosystems to be used by village communities. Stop allocation of wastelands for solar panel installations to the corporates, reserve the bio-resources for soil fertility. And permit no more allocation of bio-resources for the production of bio-fuels and compressed biogas for mobility sector use;

e. Legislate to grant to the local self-governments/state governments the power to advance the "Commons

Protection and Rejuvenation" agenda with all sections of the rural community receiving their respective entitlements and assurance of agro-ecosystem services protection. That would be through the preservation of tanks, ponds, wetlands, grasslands, local grazing lands, forests, rivers, ocean in a healthy way;

f. Create laws ensuring the right to seek redressal of grievances building up from the menace of stray animals by removing all legal and vigilante-imposed restrictions on cattle trade, compensating farmers for destruction of crops by wild and stray animals. Support animal shelters and rejuvenate commons which are the natural habitat of wildlife presently at conflict with farmers.

g. Create local capacities for self-governance with public funds in order to provide a helping hand to the village communities for the development of economic opportunity streams from healthy, restored commons with clear rights and institutions;

h. Stop the dilution of the 73rd and 74th Amendments and grant budgetary support on priority to the village councils and village assemblies (gram sabhas) after ensuring the preparation of inclusive plans for local area development;

4. Agricultural credit

a. Guarantee primary producers freedom from debt by implementing complete (formal and informal) loan waiver.

b. Restore the right of primary producers to priority lending.

c. Credit should go back to farmers, no more transfer of agricultural credit to agri-business.

d. Stop co-lending to provide for competitive input and output markets.

e. Create a single-window loan facility for all agri-allied sectors to promote integrated farming.

f. Strengthen the role of SHGs and Kudambashree-type of institutions in enabling women farmers to access agriculture credit from public banking.

g. Create in every state a "State Commission for Agriculture and Farmers' Welfare".

5. Production systems:

a. Inputs:

- De-link farmers from the high-cost economy in agriculture, and heed the two decades old-wakeup call on soil health enhancement. Reconfigure PM-PRANAM scheme by shifting emphasis from 'Zero budget' to the integrated farming including natural farming with adequate budget support to farming households to develop bio-inputs and meet the increased labor intensity, without reducing overall support for agricultural input subsidies.
- Abandon One Nation, One Fertilizer scheme. Withdraw PM Kisan Samriddhi Kendras scheme.
- Guarantee public provisioning of agricultural inputs declared as essential by the state legislatures.
- Regulate prices, interest charges and insurance premiums for the inputs declared as essential to ensure secure and affordable access to low cost external inputs to make farming viable.

- Stop the loot of peasantry by the private sector through PMFBY in provision of crop insurance; replace with a just crop and livestock insurance system run by state providers;
- De-link farmers from the high-cost economy in agriculture and reduce the risks they face in pursuing their occupation.
- Grant of fixed endowment of: (i) electricity to the farmers to meet their water requirements for agricultural operations without adding any fresh burden of costs; (ii) seeds and (iii) bio-inputs
- Create laws to ensure a minimum share of water and biomass to landless farmers, women farmers, dalit farmers and rural workers engaged in rural non-farm occupations. In value terms that should be not less than 40% of the total gained by the village community from the investment of Union/State government irrigation schemes (major as well as minor)/watershed/ afforestation projects;
- Grant primary producers the first right of access to bio-mass (grains, crop residue as well as co-products and by-products) required for the soil health, local use and value addition.
- Promote decentralised, local production of bio-inputs.
- Provide a labour subsidy of 50 days to small producers and tenant cultivators ready to diversify into labour intensive farming (e.g. agro-forestry, mixed cropping, cereal legume-based cropping systems, animal husbandry, and aquaculture).
- Promote local seed conservation and breeding for not just yield, but also resilience to disease and physical stresses.

b. Offer public assistance to primary producers directly through the state / local self-government seeking to incentivise the use of land for the promotion of agro-ecosystem specific cereal legume based cropping systems / integrated farming systems (crop-livestock integration), farm ponds, hedges, vegetable gardens, backyard poultry, agro-forestry, kitchen gardens, livestock shelter, machinery hiring stations and local storage facilities,

c. Village councils and state governments must have the right to participate in the determination of product, process and area-level system wide standards. That means standards required for the promotion of sustainable use of resources and infrastructure.

d. Every agricultural university in the country needs to be mandated to study climate change in their States/ regions and make public their findings.

e. Implementing schemes for soil health improvement and sustainable farming should be made the mandate of agricultural universities and state agricultural departments.

6. Marketing:

a. Guarantee remunerative prices for agricultural commodities through the establishment of an effective system of public procurement of all farm produce essential for the promotion of sustainable rural livelihoods and a universal public distribution system.

b. Guarantee access to publicly-regulated markets purchasing the primary produce at the minimum support price (MSP) not lower than C2 costs plus 50 % for the products declared as essential commodities

for production by state legislatures. That to also be done with union government ensuring finance for public procurement and a price stabilization fund;

c. No transaction below minimum support price (MSP) for agro-produce;

d. Diversify and decentralize public procurement scheme (rice, wheat, pulses, oilseeds, millets...);

e. Promote Kisan Mazdoor cooperatives against corporate agriculture, particularly promote women cooperatives.

f. No to free trade agreements (FTAs). Take agriculture out of WTO.

g. No to patent like intellectual property rights (IPRs) on seeds

7. Education, Research and Development and Extension

a. Stop privatization of public sector research, extension and education.

b. Ensure agro-ecologically coupled integration of primary, secondary and tertiary industries through the restoration of state / district level planning,

c. Secure knowledge support for local production of organic manure and bio-inputs to prioritize INM, IPM, IFS, landscape planning land use change management to enable cost reduction and wasteful private investment,

d. Redevelop krishi vigyan kendras (KVKs) as public infrastructure. They should be viewed as an essential public service.

e. Restore the pre-reform level of professional staff for agricultural extension. That means filling the vacancies

within state agricultural departments, public sector R&D institutions, NABARD and other such institutions. At every stage, see that farmers are also drafted into the process of rebuilding the extension machinery.

f. Withdraw from the agreements signed by ICAR with Bayer, Amazon and other MNCs.

8. Reconfigure agricultural value systems

a. Guarantee protection against corporate capture of agricultural value chains. Change competition law to curb growth of monopolies. Revitalize public sector in marketing of agricultural produce, agro-processing and food processing.

b. Reintroduce sectoral reservation in the case of products attracting the AGMARK label to encourage value addition through cooperatives, micro and small businesses, and the public sector.

c. Restore the primacy of public sector in the case of essential infrastructure requirements of digital infrastructure, market development, agricultural education, and research and extension systems.

9. Public investment

a. Guarantee extra budgetary resources to states from the 15th finance commission for raising the level of gross capital formation in agriculture as a percentage of GDP from the current level of 15.7% to 30%.

b. Increase public expenditure on irrigation, research & development, extension services, market infrastructure, etc.

c. Restore the primacy of public sector in agriculture through policy change, and amend suitably the Model Agriculture Produce and Livestock Marketing Act, etc.

d. Guarantee public financial support for transformation towards climate resilient and low-emission agriculture. This can be achieved through three interlinked pathways: public funds for restoring agro-ecosystem services, promoting resilient agriculture, and facilitating climate informed public advisory and risk management services, and reconfiguring food systems.

10. Digitalisation in agriculture

a. Withdraw from agreements inked by the Ministry of Agriculture & Farmers' Welfare through Agri-Stack with MNCs for agri-digitalization.

b. Digitalisation in agriculture should be developed as a commons which is owned and controlled by farmers and the government policy should reflect this.

c. Provide support to platform cooperatives and act against the government-initiated privatization of data and network systems under implementation through agri-Stack,

d. Pave the way for national ownership of infrastructure required for agri-digitalization.

11. Democratization of policymaking

a. Stop back door entry of the three discredited, now withdrawn, farm laws through the Union Government's usurpation of powers of the state governments.

b. Prevent Bill Melinda Gates Foundation, World Bank and USAID from determining the policies and programmes of agriculture and allied sectors.

c. Special session of Parliament and State legislatures on agrarian issues

Part II Highlights of sectional & sectoral consolidation of demands of socially marginalized sections (Women, Adivasis, Dalits and Rural Labour)

Women

a. Recognize women as farmers: secure their tenancy rights over leased lands.
b. Provide equal pay for paid agricultural work for women.
c. Remove Aadhaar based enrolment and compulsory attendance in MGNREGS.
d. Waive loans to widows of farmers who have died due to agrarian crisis and provide them infrastructure and support for agriculture.
e. Expand SHG bank linkage programme in National Rural Livelihood Mission and ban MFIs from getting bank loans under priority sector.
f. Promote women's cooperative (like kudumshree collective farming efforts, fish processing and livestock cooperatives, promotion of minor forest produce etc.) through state budgetary support.
g. Enact legal guarantees for social protection and occupational safety of women agricultural and non-farm workers: ensure creche and nutrition support.
h. Secure rights over water, common and grazing lands.
i. Secure support for nutrition and health care for women and children: provide neighburhood child care centres and creches.

Adivasis

a. Implement Forest Rights Act and roll back pro-

corporate amendments to Indian Forest Act, 1927. Review all rejections under FRA.

b. Recognize land rights of Adivasis and carry out land reforms.

c. Implement PESA to prevent land grabs and recognize communal rights on land.

d. Reverse privatization of mines, minerals and other common resources. Provide land for land and adequate rehabilitation packages to displaced adivasi families.

e. Provide minimum support price for non-timber forest produce and regulate exploitation by traders.

f. Punish harassment of adivasi women by forest and other officials.

g. Provide support through MGNREGS for development of ST lands and assets in villages (water bodies etc).

Dalits

a. Land **r**eforms to ensure security of tenure for small and marginal dalit farmers.

b. Measures to reduce untouchability and discrimination in labour practices. Punish those practicing untouchability on farms.

c. Ensure equal wages for same work; remove wage discrimination.

d. Remove discrimination in access to common lands and water bodies.

e. Allow work on own lands under MGNREGS.

f. Provide low interest loans and access to markets for dalit artisans and small scale fishing dependent families.

Rural Labour

a. Enact Rural Labour Social Protection Act an**d** laws for Occupational Safety of Rural Labour.

b. Recog**ni**ze labour rights through monitoring of implementation of minimum wages and equal wages acts.

c. Provide 200 days of MNREGA work: subsidize small and marginal farmers working on own lands by ensuring 100 days of labour subsidy to work on their own farms. .

d. Provide support and social security to family labour.

e. Regulate unfair practices of contractors, especially on contract and industrial farms.

f. One time loan waivers and to dalit agricultural workers.

Fisheries

a. Separate Fisheries Ministry in Central and State Governments with the mandate to protect and promote sustainable fisheries and the livelihood of small-scale fish workers including fishers, fish farmers, fish vendors and other ancillary fish workers;

b. Establish a National Commission for Fisheries to look into policy implementation, inter-state disputes, protection and promotion of the rights and entitlements of small-scale fishing communities.

c. Ensure the following rights and entitlements of small-scale fishing communities –

d. Declare traditional fishermen as scheduled tribe

e. Ensure tenurial rights, governance rights and right to economic empowerment & finance and infrastructure, quality inputs and technology

f. Legislate for right to social security & livelihood support and women fish workers' rights.

g. Stop coastal mapping without proper consultation, and the amendments made in Coastal Regulation Act should be revisited with people's participation;

h. Attempts to corporatize oceanic resources in the garb of projects such as 'Sagarmala', 'Blue Ocean Economy', 'Deep Sea exploration for Oil and Minerals' etc., should be thwarted

Animal Husbandry

a. Stop entry of private Dairy Corporate Companies and import of foreign dairy products that threaten existence of Dairy Cooperatives;

b. Abandon plan to open the Indian market by permitting Free Trade on milk and milk based products;

c. Ensure remunerative price for milk and milk products;

d. Reopen cattle trade markets;

e. End stray cattle menace.

Cooperatives

a. Provide public assistance for the rejuvenation of common property resources;

b. Grant the right to pool resources for value addition and formation of local collectives such as Kisan Mazdoor Cooperatives/group enterprises (KMCs),

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Why is the Process of de-Gendering Science So Slow?

Prajval Shastri

IIAP, Bangalore

It has been several decades since attention was drawn to the evidence that the over-representation of men in Indian science is due to societal patriarchy leaching into academia which then results in gender-based discrimination within. However, despite consequent acknowledgement of this phenomenon by the government, followed by significant funding for a couple of interventions, progress has been extremely slow. Why is this case, what are the root causes of the gender gap and how meaningful mitigation can be designed will be discussed.

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