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INSIDE

To feed the growing world population, more and more food need to be produced. With little possibility of increasing land under agriculture planners would have to think of other methods to increase agriculture productivity to meet the rising demand.

It is estimated that in the future 80 per cent of the world's foodgrains requirement would be met through increase in agriculture yields and only 20 per cent from expansion of land. The worrying fact is that while the population is increasing, agriculture productivity is not keeping pace and is out of sync with the population growth rate. If this trend continues then there would be a shortfall in food grains which will result in increasing prices, resulting in social and political upheavals.

In India with the ratio of agricultural land to agricultural population declining, as urbanization eats into villages, there is need to achieve yield of around 2100-2150 kilograms per hectare from the current level of 1700 kilograms per hectare. The demand for foodgrain is projected to touch 280 million tonnes by 2020-21.

However, the fact is that India's agriculture productivity is lower than many countries. Whereas India accounts for nearly 21.6 per cent of global paddy production, the yield per hectare is even less than that of neighbouring Bangladesh and Myanmar, and only about a third of that in Egypt. The rice yield is nearly half compared to China.

We discuss in this issue the reasons for low agricultural productivity and how it can be increased.

Even as agriculture contributes less than 20 per cent of the country's Gross Domestic Product, the sector employs nearly 52 per cent of the country's work force as nearly 70 per cent of the population lives in villages. As such ignoring issues of the agriculture sector can have cascading effects on the overall growth of the country. This is the reason why the government is emphasizing inclusive growth in all future planning.

Low agricultural productivity remains one of the greatest challenges facing Indian agriculture. If India is to evolve into a middle income country with a broad-based middle class, then rural reform, and increasing agricultural productivity will be necessary.

INDIA'S AGRICULTURAL GROWTH AND STAGNATION: A REVIEW

Dr. K. K. Tripathy

Indian agriculture, in spite of its declining share in the total Gross Domestic Products, has remained the backbone of the country's economy. The contours of Indian agriculture started showing improvement gradually after the mid 1960s with the introduction of High Yielding Varieties, and the growing emphasis on the development of agro- infrastructure like irrigation, input supply, storage, marketing and distribution of food-grains. The revolution, however, was biased towards irrigated regions and the benefits from this were not shared equally amongst all stakeholders across the country. Notwithstanding India's journey of economic reforms since July 1991, lack of availability of quality inputs coupled with less vibrant and deficient institutional reforms have continued to plague the Indian Agriculture. The need of the hour is to map the existing agricultural infrastructure in the country and to find out the issues and challenges for their speedy resolution.

Despite a mere 14.4 per cent contribution to the gross domestic product (GDP) in 2010-11, agriculture provides livelihood support to about two-thirds of India's population and ensures employment to about 60 per cent of country's work force. India has taken notable strides in the agricultural sector during the last five and half decades of economic planning. India remained a food-deficit country for about two decades after independence. India's effort in self-sufficiency taken thereafter produced positive results as the food-grain situation in the country changed dramatically. The contours of Indian agriculture started showing improvement gradually after the mid-1960s with the introduction of High Yielding Varieties (HYV) of crops. The subsequent emphasis was laid on the

development of agricultural infrastructure for supply of agro-inputs like irrigation, power, water, seed and fertilizers, creation of storage and marketing facilities and provision of adequate and fair distribution of food-grains.

Innovation in the agricultural technologies and production strategies enhanced public investment in infrastructure, research and development. The Green Revolution strategies followed in mid-1960s were adopted with much vigour and on a wide scale, especially in those areas which were endowed with irrigation and other agro-infrastructure viz. power supply, fertiliser, credit, seeds and pesticides. The spread of Green Revolution of 1960s was severely skewed in a few States viz. Punjab and Haryana. During the 1980s, new improved crop varieties, technologies and enterprises were developed for rain-fed, dry, wet and waste lands which improved the agricultural productivity and income in such regions. During 1990s, the deceleration in the agricultural growth was noticed due to the decline in the total factor productivity in various cereals which caused concern amongst planners and researchers in the agricultural field. This paper makes an attempt to examine the growth performance of the agricultural sector of the country and tries to offer solutions to issues and challenges facing agricultural development in India.

Agricultural Growth and Productivity

Agricultural Statistics 2010 of Ministry of Agriculture indicates that out of 328.73 million hectares of the country's total geographical area, the gross cropped area and the net sown areas have been 195.83 and 140.86 million hectares, respectively. The net area under irrigation is 62.29 million hectares with a cropping intensity of 139 per cent. Between 1950-51 and 2007-08, even though the gross cropped area increased by 48.5 per cent, the net shown area rose by only 18.6 per cent (Table 1).

Table 1: Indian Agriculture by Category of Land Use

(Area: Million Hectares; Growth: per cent)

Year	Gross Cropped Area		Net Area Sown		Cropping Intensity		Gross Irrigated Area		Net Irrigated Area	
	Area	Growth	Area	Growth	Area	Growth	Area	Growth	Area	Growth
1	2	3	4	5	6	7	8	9	10	11
1950-51	131.9	-	118.7	-	111.1	-	22.6	-	20.9	-
1960-61	152.8	15.8	133.2	12.2	114.7	3.2	28.0	23.9	24.7	18.2
1970-71	165.8	8.5	140.9	5.8	117.7	2.6	38.2	36.4	31.1	25.9
1980-81	172.6	4.1	140.3	-0.4	123.1	4.6	49.8	30.4	38.7	24.4
1990-91	185.7	7.6	143.0	1.9	129.9	5.5	63.2	26.9	48.0	24.0
2000-01	185.3	-0.2	141.4	-1.1	131.1	0.9	76.2	20.6	55.1	14.8
2007-08	195.8	5.7	140.9	-0.4	139.0	6.0	87.3	14.6	62.3	13.1

Source: Ministry of Agriculture, 2010

Table 1 indicates that the growth rate of net sown area has declined from 12.2 per cent during 1950-51 to 1960-61 to -0.4 per cent during 2000-01 to 2007-08. The growth rates of gross and net irrigated areas between 1960-61 and 1990-91 witnessed increase of 3 and 5.8 percentage points, respectively whereas between 1990-91 and 2007-08, the growth rates reduced by 12.3 and 10.9 percentage points.

There has been no specific correlation observed between the overall GDP growth rate and growth rate in the Agriculture and Allied Sector (Table 2) during 7th Five Year Plan (1985-90) to 11th Five Year Plan (2007-12). The maximum growth in agriculture and allied sector was experienced during the 8th Five Year Plan (1992-97). As against the target of annual growth rate of 4 per cent during the 10th Plan (2002-07), average annual agricultural growth rate was 2.5 per cent.

Table 2: Annual Average Growth Rate from 7th Five Year Plan to 11th Five Year Plan (in per cent)

Five Year Plans	Overall GDP growth Rate	Agriculture and Allied Sectors
7th Plan (1985-90)	6.0	3.2
Annual Plan (1990-92)	3.4	1.3
8th Plan (1992-97)	6.7	4.7
9th Plan (1997-2002)	5.5	2.1
10th Plan (2002-07)	7.78	2.56
11th Plan (2007-12)		
2007-08	9.8	5.8
2008-09	4.9	-0.1
2009-10	9.1	0.4
2010-11*	8.6	5.4

Note: Growth rates up to 2004-05 are at 1999-2000 prices and thereafter at 2004-05 prices
* Advance Estimate of CSO
Source: Compiled from Economic Survey, 2010-11, Ministry of Agriculture, 2010

Table 2 indicates that during the first three years of the 11th Five Year Plan (2007-2012), the agriculture and allied sector recorded an average growth of 2.03 per cent against the Plan target of 4 per cent per annum. In the first year of the plan (2007-08), the growth of agriculture and allied sector was 5.8 per cent which became negative (-0.1 per cent) in 2008-09 even though this year witnessed a record 234.4 million tonnes food production. The decline in the growth was due to reduced production of crops viz. oilseeds, cotton, jute, mesta and sugarcane. The deficient south-west monsoon in 2009-10 restricted the agricultural growth rate to only 0.4 per cent. Relatively good monsoonal rainfall during 2010-11 has prompted the Government to project the agricultural growth rate at 5.4 per cent.

The analyses of growth in food-grains production during 1960-61, 1990-91 and 2009-10 indicated that the food-grain production grew at a higher rate during 1990-91 as against 2009-10 for almost all crops under reference, (Table 3).

The foodgrain production in 2009-10 was 218.1 million tonnes. This indicates that on an average 1.11 tonnes of foodgrains are produced in one hectare of gross cropped area. Though India accounted for 21.6 per cent of global paddy production, the yield per

Table 3: Food-grains Production

(Million Tonnes)

S.N	Crop	1960-61	1990-91	2009-10	Per cent growth	
					1990-91 over 1960-61	2009-10 over 1990-91
1	Rice	35.0	75.0	89.0	114.3	18.7
2	Wheat	11.0	55.0	80.8	398.2	46.9
3	Coarse Cereals	23.0	32.0	33.6	39.13	5.0
4	Total Cereals (1+2+3)	69.0	162.0	203.4	134.8	25.5
5	Pulses	13.0	14.0	14.7	7.7	5.0
6	Total Food grains (4+5)	82.0	176.0	218.1	114.6	23.9

Sources: Ministry of Agriculture, 2010 and Economic Survey, 2010-11

hectare in 2008 was less than that in neighbouring Bangladesh and Myanmar, and only about a third of that in Egypt, which had the highest level in the reference period 2008 (Table 4).

Table 4: Yield of Selected Commodities in a few Countries during 2008

(Kg/Hectare)

Country	Rice/Paddy	Wheat	Maize	Sugarcane	Tobacco Leaves	Groundnut
Bangladesh	3,995	2,175	NA	38,475	1,374	NA
Egypt	9,731	6,501	7,977	121,136	NA	NA
India	3,370	2,802	2,324	68,877	1,405	1,071
Japan	6,488	NA	NA	NA	2,105	2,262
Myanmar	3,720	NA	NA	NA	NA	1,538
Pakistan	3,520	2,451	3,611	51,494	2,097	NA
USA	7,672	3,018	9,658	73,765	2,567	3,829
World	4,309	3,086	5,109	71,510	1,861	1,554

NA: Not Available
Source: Ministry of Agriculture, 2010

The low productivity and constrained growth of Indian agriculture are due to the following factors:

Investment in Agriculture

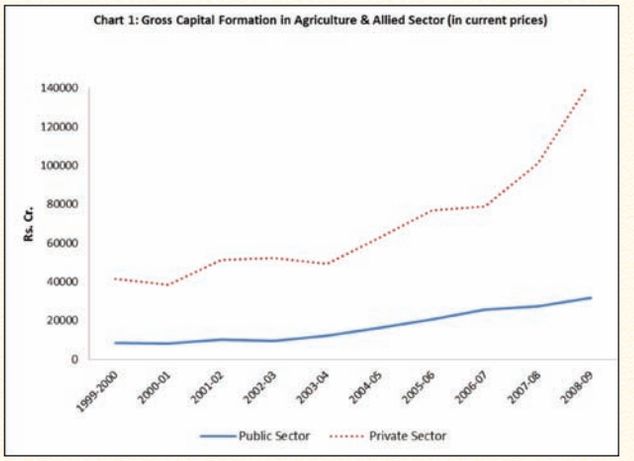
The macro-economic reforms of July 1991 led to a fiscal constraint which in turn restricted public sector investment in almost all sectors including agriculture. This limited public investment flow to the agriculture and allied sector. Table 5 indicates the presence of a huge gap in the share of gross public and private investment in agriculture during 1999-00 and 2008-09.

Table 5: Share of Gross Public and Private Investment in Agriculture

Year	Share (per Cent)	
	Public	Private
1999-00	17.8	82.2
2000-01	18.4	81.6
2001-02	18.2	81.8
2002-03	17.1	82.9
2003-04	26.8	73.2
2004-05	29.2	70.8
2008-09	18.0	82.0

Sources: Economic Survey, 2010-11; Ministry of Agriculture, 2008 and 2010

Chart 1 indicates a widening gap between the share of private and public gross capital formation (GCF) in agriculture and allied sector during 1999-00 and 2008-09. During 1999-00, the public sector contributed Rs. 8,670 cr. and private sector contributed Rs. 41,418 cr. By 2008-09, while the private sector brought in Rs. 1,43,559 cr. of investment, the public sector only put in Rs. 31,755 cr.



Protection: Agriculture vs. Industries

The industries in India experienced a high degree of protection during the 1970s and 1980s as the trade policy was in favour of the Indian industries. However, during the same period, Indian agriculture witnessed an un-protected regime. Studies relating to protection accorded to industry and agriculture, particularly during the post green revolution period, revealed that trade policies have favoured industry and discriminated against

agriculture. The process of economic reforms initiated in 1991 was expected to bring in such policies and strategies in agriculture which could lead to an emergence of favourable terms of trade for agriculture. Opening up of Indian agriculture under World Trade Organisation (WTO) and the expected changes in world agriculture would most likely accelerate this process of correction in terms of trade. The macro scenario of the economy in the post reform era is poised to witness many changes in the domestic and international agricultural strategies. However, the fact remains that this growth has not been shared by all sections of the society. This becomes more evident when one looks at the poverty figures of the country.

Agricultural Price Policy

The prevailing policy on fixation of support prices of food-grains and their procurement and distribution mechanism have not been restructured satisfactorily in the post-reform era. The continuous enhancement of procurement price of various food-grains has impacted the food subsidy bill to rise to an unsustainable maximum. Lack of domestic marketing reforms limited the free movement of agro-produce across the States. While in some States monopolistic procurement was the rule (like Cotton in Maharashtra), others continued to impose purchase levies on essential commodities like rice and sugar. An ambiguous situation has also emerged in the Indian agriculture due to the recent experience of acceleration of demand growth rate for food-grains despite the rise in buffer stocks and movement of food-grains in the public distribution system. This upward shift in the demand for food-grains has led to increased food inflation in the country. The measures undertaken to rejuvenate and popularise commodities futures market in the post-reform era have not been very successful. If we really want to increase the economic standards of the poor farmers, the government has to take adequate and appropriate action towards policy relating to introduction of futures markets, amendment/abolition of Essential Commodities Act (for flexible movement of essential goods), stocking and pricing of goods.

Agricultural Inputs: Issues and Challenges

The slogans like 'food for all', 'sustainability in agriculture', etc., can be turned into reality only when effective steps are taken to ensure agro-extension services and adequate and timely provision of quality inputs like irrigation, fertiliser, credit, seed, power to the needy small and marginal farmers. The need of the hour is to enhance productivity and to ensure livelihood security in both irrigated and rain-fed areas. This can be achieved if we ensure more and more public-private partnerships, empower women for their active involvement in agriculture, strengthen agriculture and horticulture through modern innovations and technology revolutions, sustain and expand trade in farm-commodities without neglecting sanitary and phyto-sanitary dimensions of the sector. The role of quality inputs in the development of Indian agriculture in the coming periods cannot be overemphasised. The following paragraphs describe emerging issues in the usage of agro-inputs and various problems in their effective management.

Irrigation

Growing population, unsustainable land use practices, extensive deforestation, increasing demand of water-intensive industries and agriculture are leading to the fast depletion of world's fresh-water reserves and becoming the basis for many water-related contaminated diseases. The exploitation of natural resources like water has a direct bearing on agricultural productivity, food security and public health. Since this has a direct linkage effect on the environment and society at large, the much anticipated and rapid agricultural progress in an agrarian country like India, requires effective management of this vital agricultural input. Since rainfall in India is confined mainly to the southwest monsoon months of June to September and is usually quite erratic, the creation of potential irrigation facilities and achievement of the potential becomes the need of the hour.

Though India experiences about 1,100 mm rainfall annually, frequent floods and droughts are common features of the country's monsoon ecology.

In many regions, long duration dry spells followed by heavy down pour affect the crop productivity severely. It is estimated that in the summer months, nearly 60 per cent of total tube wells do not function and most of the ponds, water tanks and other water resources dried up due to fast depletion of water table, less recharge of ground water aquifer. In States like Punjab and Haryana water table, on an average, is receding 8 to 10 metres a year. Thus, emergence of frequent erratic rainfall pattern and unsustainable water use in India calls for effective management of rain and surface water to ensure sustainability in agricultural production.

Efforts should be made to complete the planned and under construction multi-purpose river valley projects by prioritising and allocating resources for their immediate completion. Further, there is a need for the Government, non-government organizations and public to lay stress not only on the renovation and construction of new water harvesting projects but also on the revival and reintroduction of traditional water harvesting techniques followed traditionally.

The country needs to revive and disseminate various environmentally sustainable and topography-specific Traditional Water Harvesting Practices. These were adopted, in the earlier days, for harvesting and managing rain water. The uses of the water bodies were defined season-wise, and management terms and systems were framed in such a way as to benefit the largest possible number of people with existing resources at minimal costs. These methods, if revived and emphasised for reintroduction will not only ensure irrigation in summer months but will also help in controlling soil erosion, unnecessary wastage of water, recharging water aquifer. Since Mahatma Gandhi National Rural Employment Guarantee Schemes (MGNREGS) in the States permits water harvesting and conservation activities, the resources of this scheme need to be dovetailed with agricultural activities at the Gram Panchayat/block panchayat level.

Credit

The flow of agricultural and rural credit witnessed rapid increase after the first round of bank nationalization in 1969. Between 1971-72 and 2007-08, agricultural credit witnessed a jump of around 220 times from merely Rs 883 crore to Rs 1,94,953 crore (Table 6).

The overall higher-order credit growth in the banking system has not supported the desired expansion of agricultural credit and credit to

Table 6: Direct Institutional Credit to Agriculture and Allied Activities

(Short and Long Term; 1971-2 to 2007-8)

Year	Share in total credit (per cent)				Total (Rs crore)
	Cooperatives	State governments	SCBs	RRBs	
1971-2	87.1	11.2	1.7	-	883
1981-2	57.7	3.6	34.8	3.9	4296
1991-2	50.2	2.9	41.7	5.2	11,538
2001-2	56.4	0.8	34.4	8.4	54,195
2002-3	52.2	-	38.8	9.0	65,175
2003-4	48.0	-	43.4	8.6	83,427
2004-5	42.7	-	45.9	11.3	105,303
2005-6	33.4	-	56.0	10.6	144,021
2006-7	28.5	-	60.8	10.7	189,513
2007-8	29.6	-	58.2	12.2	194,953

Notes: SCBs: scheduled commercial banks, RRBs: regional rural banks
Source: Reserve Bank of India, 2010

small-scale industries. The sectoral orientation of bank credit under priority sector lending ensures guaranteed flow of credit to the priority areas, namely agriculture and allied sectors, small-scale and cottage industries, and socially and economically weaker sections of society. Table 7 indicates that the share of priority sector advances in total credit of Scheduled Commercial Banks (SCBs) went up from 14 per cent in 1969 to 42.9 per cent in 1987 and thereafter fell below the prescribed 40 per cent limit. In the post-bank reform period (post-1992) the share of priority sector lending in total credit of SCBs has ranged between 32.8 per cent in 1996 and 36.7 per cent in 2005.

Table 7: Share of Priority Sector Advances in Total Credit of SCBs 1969-2010

Year	Share (in per cent)
1969	14.0
1972	21.0
1975	25.0
1978	28.6
1981	35.6
1984	38.1
1987	42.9
1990	40.7
1993	34.4
1996	32.8
1999	35.3
2002	34.8
2005	36.7
2008	34.9
2010	35.1*

* Provisional

Sources: Shah et al. 2007; RBI 2011.

Transformation in banking policies and practices and the resultant improvement in the outreach of and access to total bank credit during the post-bank nationalization period have not satisfactorily addressed equitable and efficient delivery of agricultural and rural credit. Due to declining public capital formation in the rural and agricultural sector and the persistent lukewarm attitude of rural bankers towards formal financing, the planners and policymakers are relying on microfinance to suitably supplement formal banking in rural India.

Seeds

Quality seeds, the basic input for agriculture, accounts for 25 to 30 per cent of increment in the crop-yield. In India, 80 per cent of the farmers rely on farm- saved seed. The low seed replacement rates results in low productivity. The public sector continues to play a dominant role in production and distribution of low-value high-volume seeds like cereals, pulses and oilseeds whereas, high value low volume segments like vegetable and horticulture crops have witnessed private sectors' intervention in India. The national seed policy of the Government of India calls for a convergence between public and private sector. Since the country is one of the signatories of WTO and is regularly negotiating with the developed and developing world on agriculture trade, commerce and plant protection etc., the time entails an enabling environment not only for promoting quality seed production in India but also to protect rights of farmers and plant breeders by promoting investment in development of new varieties. The farmers and other private players in the agriculture should take advantage of the liberalised and simplified seed export and import regime to facilitate availability of quality seed to Indian farmers and help India to become a global hub for quality seed production.

Fertilisers

The consumption of Nitrogenous (N), Phosphatic (P) and Potash (K) fertilisers are on the rise (Table 8). However, there still persists a huge variation in the consumption of fertilisers across States. The time has come to assess State-wise consumption pattern of these chemical fertilisers, their impact on ecology and the likely burden on the farmers and productivity of crops. This will also rationalise the subsidy payments of the government as the central government has, with effect from April 2010, introduced a nutrient-based subsidy scheme by amending subsidy per kilogram of nutrients contained in fertilisers.

Table 8: Consumption of Major Fertilizers

(lakh tonnes)

Category	2000-01	2002-03	2004-05	2006-07	2008-09	2010-11 (April-Sept.)
N	109.2	104.7	117.1	137.7	150.9	80.6
P	42.2	40.2	46.2	55.4	65.1	41.7
K	15.7	16.0	20.6	23.3	33.1	17.3
Total	167.1	160.9	183.9	216.5	249.9	139.4

Sources: Economic Survey 2007-08 and 2010-11

Concluding Remarks

The social and economic vulnerability of agriculture in developing countries is reflected in factors such as substantial contribution of agriculture to their GDP, low level of commercialisation and diversification of agriculture, low productivity, weak market-orientation and market-linkage, prevalence of small and marginal uneconomical operational landholdings, underdeveloped or lack of adequate agro-infrastructure, heavy reliance on monsoon, susceptibility to natural calamities, and dependence of a very large percentage of population on agriculture for their livelihood, etc. Even after five decades of green revolution and about two decades of economic reform, the issues and rigidities in Indian agriculture have not successfully resolved these vulnerabilities. With increasing population and enhanced pressure on agro-produce, there exists every justification to map the prevailing agricultural infrastructure in the country and resolve issues and problems towards ensuring food and livelihood security to millions of Indian poor farmers.

Agriculture, even today, is considered to be a viable source of livelihood and effective rural job creator. Food and livelihood security is not only of great economic significance, but also a very important socio-political concern in large agrarian economies like India. The agriculture development strategies need to be integrated aiming at better management of food economy, removal of constraints on the movement of food-grains within the country, enhancement of credit flow to farm sector through institutional channels. Trying out special initiatives like credit-linked subsidy scheme for construction of cold storages and rural go-downs, reducing rate of interest for funding the storage of crops could enable farmers to enhance their productivity and holding capacity to sell their produce at remunerative prices. These along with convergence of multiplicity of schemes, pooling of funds from different sources, integrating watershed works with joint forest management, rain water harvesting initiatives, linking various co-ordinating departments like Departments of Water Resources, Agriculture, Rural Development etc. are the need of the hour.

Further, in the wake of globalisation, agricultural products and commodities will have to play an active role in the country's international trade. In spite of tremendous comparative advantage in agriculture and existing large volumes of trade, India has not yet become a major stakeholder in the world commodity market except in less valued items like tea, coffee, cashew, soya-meal, spices and rice. It is high time that India improves upon the situation by enhancing and actualising her trade competitiveness and achieving the status of a net exporter for commodities in which India has relatively more comparative advantages. The liberalised trade regime in agriculture would definitely have a rippling effect on the price, availability and distribution of domestic agro-products. Thus, it is required to assess the likely impact of globalisation and accordingly modify and rewrite the agricultural strategy for maximising benefits from the new opportunities opened up by trade under WTO.

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NEED FOR RAINBOW REVOLUTION TO INCREASE PRODUCTION IN AGRICULTURE

Dr. Harender Raj Gautam and Er. Rohitashw Kumar

Agriculture production can only be increased by reducing prevailing knowledge deficit of latest agricultural technologies with the farmers. Knowledge deficit can be improved by strengthening human resource, capacity building and rapid transfer of the farm technology.

World population has crossed the 7 billion figure and the most important challenge before the planners is the availability of adequate food for everyone. There is need to achieve sustainable increase in agricultural production to meet this challenge. In developing countries, 80 percent of the necessary production increases would come from increases in yields and cropping intensity and only 20 percent from expansion of arable land. But the fact is that globally the rate of growth in yields of major cereal crops has been steadily declining, it dropped from 3.2 percent per year in 1960 to 1.5 percent in 2000. India with a population of 1.2 billion has grown at the rate of 17.64 per cent over the last decade and the demand for food grain is projected to touch 280 million tonnes by 2020-21. The ratio of agricultural land to agricultural population has shrunk to 0.3 hectares per person in India, as compared to over 11 hectares per person in the developed countries. Due to demographic reasons, per capita availability of land, water and other natural resources will continue to decline. There is need to achieve yield of 2100-2150 kg / ha from current level of 1700 kg/ha.

Knowledge Deficit

Agriculture production can only be increased by reducing prevailing knowledge deficit of latest agricultural technologies with the farmers. Knowledge deficit can be improved by strengthening human resource, capacity building and rapid transfer of the farm technology. India's crop yields are far below that of many regions. For example, India's wheat yield at 2600 kg / ha is well below that of China (4100 kg / ha) and Europe (5000 kg / ha). Similarly, India's rice yield at 3000 kg / ha is again well below that of china (6200 kg / ha), Europe (6400 kg / ha) and USA (7500 kg / ha). India's soybean yield at 870 kg / ha is far below that of Brazil (2500 kg/ha), Europe (2600 kg / ha) and US (2700 kg/ha). Productivity of apple is only 6 to 7 MT per ha in India in comparison to more than 40 MT per ha

in countries like Belgium, Denmark, Netherlands, New Zealand and USA.

In 2010-11, India got a quantum jump in agricultural production from 232 million tones in 2009-10 to 241 million tones bringing a great relief to the planners which will help in strengthening food security and also stabilize the prices of food commodities. It is estimated that by 2020, India will require 270 to 290 million tons of food grain. The challenge for technology is to reverse this decline, since a continuous linear increase in yields at a global level following the pattern established over the past five decades will not be sufficient to meet food needs. Although investment in Research and Development in agriculture continues to be one of the most productive investments, with rates of return between 30 and 75 percent, it has been neglected in most low income countries. Currently, agricultural R&D in developing countries is dominated by the public sector. Increasing private sector investment will require addressing issues of intellectual property rights while ensuring that a balance is struck so that access of smallholder farmers to new technologies is not reduced.

Focus Areas

The Indian agriculture has to focus on six key areas which are irrigation, biotechnology, protected cultivation, horticulture, post-harvest technology and crop specific missions. As Indian agriculture is mostly rainfed, there is need for augmenting the irrigation facilities and this can be done by rainwater harvesting and by ambitious plan of inter-linking of the rivers. There is also urgent need for application of biotechnology in agriculture. The biotechnological tools should be used to produce high yielding, pest-resistant and drought and flood resistant varieties of major foodgrains, pulses and oilseed crops. Government has and will continue to support and contribute to initiatives taken by the stake holders to hasten the process of biotechnology applications in agriculture. Protected cultivation is also important to increase the production of vegetables, fruits and ornamental crops in the country. In protected cultivation, two to three times higher yield of vegetable, fruits and ornamental crops can be realized which can further boost the agriculture production in the country. India is having only 3000 ha area under protected cultivation in comparison to more than 60, 000 ha area in Spain. In Netherland, 1 per cent of the area out of total cultivated area under protected provides 60 per cent of the agriculture production which highlights the potential of protected cultivation in increasing the agriculture production. Protected cultivation should be introduced in low productive areas with innovative farmers with strong technological and financial support of the Central and state governments. Some states like Himachal Pradesh, Utterakhund, Maharashtra and Karnataka have introduced special schemes of financial assistance for the establishment of poly-houses to the farmers.

Horticulture

Horticulture accounts for 30 per cent of India's agricultural GDP from 8.5 per cent of cropped area. It is one of the world's biggest producers of horticultural products growing nearly 11 percent of all the world's vegetables and 15 percent of all fruit. Apart from bringing in revenue from exports, horticulture plays a significant role in improving the livelihood of the rural populace. Being labour intensive, it generates a lot of direct and indirect employment opportunities. According to estimates, there is more than 200 million hectares of wasteland in India which can be brought under cultivation. This move, if implemented, will help the country in a big way to tackle the nutritional crisis. Horticultural products are a rich source of vitamins, proteins and carbohydrates and minerals. According to estimates, the per capita consumption of fruits and vegetables in India is only around 46g and 130g which is far below the stipulation of a minimum of 92g and 300g respectively as recommended by the Indian Council of Medical Research, New Delhi and National Institute of Nutrition, Hyderabad.

Value Addition

Value addition in the form of food processing is another key area which can bring sustainability to the food security as agriculture produce worth Rs. 55, 000 crores is wasted every year due to post-harvest losses. It is around two per cent for fruits and vegetables, 26 per cent for marine, six per cent for poultry as against 60 to 70 per cent in developed countries. India has adopted "Vision 2015" which aims to triple the size of food sector in 10 years time by increasing the level of processing of perishables from 6 to 20 per cent, value addition from 20 to 35 per cent, share in global trade from 1.6 to 3 per cent. This would require making processed food affordable domestically and competitive globally. An investment of about Rs. 1,10,000 crores is envisaged in the next ten years. Further, there is need for crop specific and time bound crop specific missions in key

crops like wheat, rice, maize, sugarcane, potato which constitute majority of our food basket. The goals of these missions should be redefined every 5 years to infuse new technological tools.

Raising Productivity

Raising Crop Productivity is important to increase crop yields per unit of land in some parts of the country. In the '60s and '70s of the last century, India had the first Green Revolution. Before the green revolution, per hectare rice yield was 1,013 kg and in case of wheat it was 851 kg which increased to 2,150 kg and 2,830 kg, respectively. It was essentially the major contribution of the farmers in Punjab, Haryana, western UP and parts of Andhra Pradesh. The First Green Revolution was almost confined to irrigated areas but now our focus should be on the rain-fed areas, which constitute about 60 percent of the cultivated areas in the country. Out of the total food production in the country, approximately 40 percent of the food production is from dry land farming which supports about 40 percent of the population mostly belonging to the poorer sections of society.

A second area needing immediate attention and action relates to improving the productivity of wheat, rice, pulses and oilseeds in the Indo-Gangetic plains and eastern India, particularly in Bihar, Jharkhand, Chhattisgarh, Orissa, eastern Uttar Pradesh, West Bengal and Assam. In most of these areas, water management and not water availability is the major constraint in productivity improvement. Out of 266.2 lakh ha rice area in eastern India (UP, Bihar, Jharkhand, West Bengal, Assam, Orissa and Chhatishgarh), approximately 143.4 lakh ha is rainfed and prone to different abiotic stresses like flooding, drought or soil salinity/sodicity. Approximately 50 lakh ha and 87.8 lakh ha rice area in eastern India frequently encounters flash-flood and drought, respectively. Approximately 6 lakh ha rice area is affected by coastal and 7.5 lakh ha by inland salinity/sodicity. These abiotic stresses are single most important yield limiting factor for eastern India. Rice productivity of eastern India is not only low (1.1 to 2.5 tons/ha) but also fragile. For fear of these stresses, farmers use little inputs which further aggravate the situation. This time the government has decided to concentrate on other states, including eastern region, with an area specific approach. The Northeast is endowed with enormous potential in the agri-horti and other allied sectors. These have to be tapped to the optimum level to step up production in a big way to increase the agriculture production and to realize the same, Rs. 350 crore has been provided this year as additional financial support for West Bengal, Bihar, Orissa, Jharkhand, and the N-E states. The available data show that the productivity of kharif sorghum can be increased 3 to 4 times, rabi sorghum 1.4 to 2.3 times and bajra 1.8 to 2.3 times from their current level of productivity. Similarly, the productivity of pulses and oilseeds can be increased 2.3 to 2.5 times, through attention to seeds, soil health, pest management, crop life saving irrigation and post-harvest technology. Supplemental irrigation based on rain water harvesting will help to increase yields further.

Today, it is possible to increase the yield with the combination of new technologies based on genetically modified seeds and by applying existing and traditional technologies like better use of fertilizer and improved irrigation systems. For example, in the US, new seed technologies have drastically reduced diseases vulnerability of crops like maize and cotton. In India also, use of BT cotton, a genetically modified version of cotton seed has resulted in higher yields and reduced the use of pesticides drastically.

Agriculture Technology

The Central Government has taken number of steps to create necessary infrastructure for dissemination of agriculture technology in the country. Krishi Vighyan Kendras (KVKs) have been established in each district of the country and now these are the backbone of technology dissemination in our country. There are 589 KVKs in the country with the mandate to function as knowledge and resource centres of agricultural technology at the district level which could increase the technology adoption rate. These KVKs should work as technology umbrella in the district and should work in an integrated way with State Departments of Agriculture, Horticulture and other sister Departments in the district for effective delivery of the technology and inputs in an effective way. But, there is urgent need to equip these KVKs with necessary technological infrastructure. They should meet every six months to discuss their input delivery and technology dissemination strategies in an effective manner to assess the past performance and plan the strategy for the next season. Human resource is important in the agricultural institutes and development departments

in the centre and the states. State governments should fill up vacancies of scientific and extension personnel in State Agricultural Universities, and State Departments of Agriculture, Horticulture and other allied Departments within a reasonable time frame to tackle the problem of manpower shortage. Village should be developed as the last technology centre so that farmer has not to go far away places to get the farm information. The world has witnessed a revolution of information and communication technologies and our farmer too deserves to be benefited from it.

A communication system that provides information about agricultural policies, markets and weather, credit and crop insurance services is important. Knowledge has to be synergized at the village level through "farm knowledge centres" in which Panchayati Raj institutions can play a critical role. The recently launched India Development Gateway Portal by the Ministry of Communications and Information Technology could be used extensively for dissemination of information to all our villages. village-based farm schools throughout the country, mostly as private institutions supported and supervised by government. Media can play an important role in reducing the knowledge deficit, whether it is visual, audio or print media. Community Radio Station can be an effective and cheap tool for agriculture and rural development and it should be promoted in Public – Private Partnership model. Community radio, Call centres and Mass media need to be harnessed for wider dissemination of best practices. Village Knowledge Centres, and online databases in local languages should be established. Liberal access should be ensured to vast pool of farm knowledge to all players in public and private domain. Farm journalism should be promoted by suitable arrangement for documenting success stories and best practices.

Beyond these key areas, there is need to revamp the research, teaching and extension network of the state agriculture universities. Most of the agriculture universities face resource crunch in funding their different research, teaching and extension programmes. The Central Government should exert more administrative influence on these institutions in prioritizing their research, teaching and extension programmes. The funding to these institutions should be increased linked with time bound objectives and with a cap on need-based scientific and other manpower. The central government should also devise effective system in inter-linking the institutes of Indian Council of Agricultural Research and other institutes engaged in agriculture research with the state agriculture universities for pooling of the resources scientific expertise in achieving common objectives. Keeping in view the strong Research and Development base in the country and trained man power this should be possible within the short term. India has considerable strength in agricultural research and education. We have the third largest pool of scientific and technical professionals and there is need to utilise them effectively by setting the priorities and creating necessary infrastructure.

The population growth will go unabated and by 2050 the world's population will reach 9.1 billion, 34 percent higher than today. In order to feed this larger, food production must increase by 70 percent. Annual cereal production will need to rise to about 3 billion tonnes from 2.1 billion today and annual meat production will need to rise by over 200 million tonnes to reach 470 million tonnes. The investment in farm research should be 2 per cent of the agriculture gross domestic product (GDP) which currently ranges from 0.5 to 0.6 per cent. Allocation for agriculture in state budgets has been only 5.84 per cent during 2008-09, in spite of the fact that this sector is the backbone of the rural livelihood security system. Under investment in agriculture is creating knowledge deficit and due to this agriculture yields in India are lower in comparison to the developed world. Food and Agriculture Organization (FAO) have indicated that agriculture in developing countries would need an investment of around US $ 30 billion to achieve the goal, set by the World Food Summit in 1996, of reducing the number of hungry people by half by 2015. However, the FAO has also said in a statement on the occasion of the World Food Day 2009 that the world has the ability to find money to solve problems if these problems are considered important. India needs multi-pronged strategies and technologies such as Green revolution, Blue revolution, White revolution and of course the latest yellow revolution to achieve Rainbow revolution.

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IRRIGATION: A NECESSARY INPUT TO BOOST AGRICULTURE

Dr. Anita Modi

In our country, about 83 percent of the available water is used for irrigation in agriculture. It is estimated that the demand of water for irrigation will increase.

Agriculture is the "backbone" of our country. Development, prosperity and stability of agriculture depend on the efficient management of soil and water systems. In the context of water systems, irrigation is a pre-condition for the success of agriculture. The importance of irrigation in agriculture is also amply clear from the fact that a major chunk of available water in the world is used in the agriculture sector. At the global level, 65 percent of the total available water is used in agriculture sector, 23 percent in industries and the remaining 8 percent is used for domestic and other purposes. Again, the need of excessive water for the production of agricultural output is quite obvious from the fact that about 1000 tones of water is required for the production of one ton of wheat. Thus, assured irrigation system is essential for the generation output, employment, and income and capital formation in agriculture.

Water More Valuable Than Land

In our country, about 83 percent of the available water is used for irrigation in agriculture. It is estimated that the demand of water for the purpose of irrigation will further increase. The significance of irrigation in our country also enhances because of the fact that 58 percent of our population depends on agriculture and its related activities for their livelihood. Highlighting the importance of irrigation, Sir Charles Trevelyan has aptly remarked, "irrigation is everything in India; water is even more valuable than land." Irrigation is not only an insurance against the vagaries of nature but also helps in raising the productivity of land.

Since independence, emphasis has been put on the expansion and development of irrigation infrastructure to boost agriculture production. The actual irrigation potential created has risen from 22.6

million hectares in 1950-51 to around 102.8 million hectares in 2006-07. About 42.4 million hectares of irrigation potential has been created through major and medium projects whereas over 60.4 million hectares through minor irrigation projects. It is noted that about 74 percent of the total exploitable irrigation potential has actually been utilized. The country's total irrigation potential from all available sources is estimated about 139.9 million hectares, in which the estimated share of major and medium projects is about 58.3 million hectares and 81.6 million hectares through minor irrigation projects.

Our government has implemented many policies to assure water for irrigation in agriculture. National Water Policy was adopted in 1987 to control the excessive exploitation of water and conserve the water sources and resources so that the development of agriculture can be ensured. In the same way, Bharat Nirman Yojana was initiated for the period 2005-06 to 2008-09 for the infrastructural development of rural areas. In this program, irrigation is considered as the main component of agriculture. The target was laid down to create irrigation potential of 10 million hectares.

Irrigation Potential

Despite the achievements in the irrigation system, there are some critical issues which should be analyzed. First of all, the under utilization of existing irrigation system is a cause of concern. It is estimated that about 85 percent of the created irrigation potential is actually been utilized and the rest is lying idle. According to official estimation, the actual utilization of created irrigation potential is about 87.2 million hectares only. The main factors responsible for this dismal picture of under utilization are poor maintenance and operation of irrigation projects, lack of complementary facilities like field distribution system, water control structures, leveling of land, roads, credit, and marketing and proper water-drainage system. It is also observed that inadequate water conveyance system is also causing the problems of wastage of water, water logging, floods and salinity.

It is urgently required to implement the multi-cropping system and alternative cropping pattern for deriving the maximum benefits from large scale investment in irrigation system. It is found that most of the irrigated area is under the single crop system. In Ninth Five Year, to lessen the gap between created irrigation potential and its actual utilization, Command Area Development Programme, institutional reforms and participation of farmers in management of irrigation projects etc. have been adopted. It is heartening to note that Water Resources Ministry has started farmers' participatory research programme with the cooperation of agriculture universities and research sections to disseminate the knowledge of latest techniques to the farmers. In Eleventh Five Year plan, the target of increasing the irrigation facilities by 25 lakh hectare annually is laid down so that the dependence of agriculture on monsoon can be reduced. For the optimum utilization of irrigation potential, a provision of Rs. 5000 crore is also made by Thirteen Finance Commission for the period of 2011-12 to 2014-15.

Another main concern about irrigation is that since 1970's, the dependence on ground water for irrigation has increased leaps and bounds. The excessive extraction of ground water for irrigation has endangered the "bank" of ground water. The subsidized rate of electricity, easy availability of loans for boring purposes, pump sets, lack of knowledge to farmers about scientific agriculture system and the absence of rain water conservation methods are the factors responsible for the depletion of ground water. About 60 percent of irrigation in the country is done with ground water.

It is estimated that a 10 percent increase in the efficiency of water use can irrigate additional 140 lakh hectare land. To achieve this objective, it is essential that necessary information about efficient water use must be provided to the farmers and complementary irrigation facilities must be ensured. The participation of farmers in the management and maintenance of irrigation system should be raised by conferring on them some type of co-ownership in the irrigation system. The private sector should also be encouraged to participate in the development of irrigation sector. Lastly, a comprehensive watershed management plan should be formulated and effectively implemented for the successful operation of irrigation sector. To make efficient use of irrigation system and to minimize water wastage; it is desirable to promote the sprinkler method of irrigation. All these measures will go a long way to make the country "water rich" and "agriculture rich".

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AGENCIES FOR CALCULATING AGRICULTURAL PRODUCTIVITY IN INDIA

Dr. M. Perumal and P. Soundararajan

There is no specific legal act in India for periodic enumeration of crops and compilation of land use statistics or agricultural census. Acts exist for population census and the collection of industrial statistics. In India, the Collection of Statistics Act 1953 is created to facilitate the collection of statistics related to industries, trade and commerce. Under the provision of the Act, statistics are collected for any matter related to any industry or class of industries of any commercial or industrial concern and in particular, related to factories. The Act also mentions that the statistics are to be collected on matters like prices of commodities, employee attendance, their living conditions including housing, water, sanitation, indebtedness, rents of dwelling houses, wages and other earnings, provident and other funds provided for labour, benefits and amenities provided for labour, hours of work, mandays employed and unemployed, industrial and labour dispute, labour turn-over. If any person is found guilty for not providing any information or refuses to answer or gives false answers to any questions for obtaining any information required to be furnished under the Act, he is liable to punishment with fine. The Act does not specifically cover agricultural activities as such. However, some of the items like prices of (agricultural) commodities, indebtedness etc. pertain to the domain of agricultural statistics.

Collection of statistics under Agricultural Census, which is conducted every five years to collect data mainly on area and number of operational holdings, is not covered under the purview of any Act, as such.

The National Statistical Commission (NSC) is the apex advisory body of India. It assumed charge on 12th July 2006. The present NSC is envisaged to become a statutory commission within a year of its assuming charge. It is composed of a part-time Chairman and four part-time members. The Secretary of Planning Commission is ex-officio member of the NSC. One of the members is from the field of economic statistics with specialization and experience on agriculture, among other things.

To contact the NSC, send correspondence to nsc-secretariat@nic.in. The E-mail address of the Chairman is suresh.tendulkar@gmail.com and of the member (Agriculture) is drpadamsingh@epos.in.

Agricultural Statistics System in India is decentralized both horizontally and vertically. Primary statistics are collected by the State governments (provincial or sub-national) and consolidated for the country as a whole by the Directorate of Economics & Statistics (DES), under the Department of Agriculture & Cooperation, Union Ministry of Agriculture. Because of the decentralized character and non-earmarking of funds specifically for agricultural statistics, it is difficult to furnish data on financial resources. This system, which has evolved over the course of time, provides various sets of statistics, data, indices and indicators. Agricultural statistics are also generated through various surveys and statistical operations conducted by different institutions and government departments. The DES is the nodal agency for compiling, documenting and disseminating the basic data and the key indicators at the national level.

The Directorate of Economics & Statistics (DES) established in the year 1948 is headed by the Economic & Statistical Adviser (ESA). The ESA is supported by six Advisers, two from Statistics discipline and four from Economics discipline (with formal knowledge of statistics). The next hierarchy consists of three Additional Statistical Advisers and three Additional Economic Advisers. They are supported by two Deputy Statistical Advisers and seven Deputy Economic Advisers. Below this hierarchy, there are three Deputy Directors of Statistics and four Assistant Economic Advisers. It is to be mentioned that data on financial (budgetary) resources specific to agricultural statistics are not maintained.

DES releases every year estimates of production and yield of foodgrain crops, oilseed crops, sugarcane, fibre crops and important commercial and horticultural crops. Data on nine-fold land use classification, irrigation (crop-wise and source-wise) are also collected and compiled at the national and sub-national levels on an annual basis. Weekly data on wholesale/retail prices and farm harvest prices are collected from agriculture markets and used for the compilation of wholesale price index for agricultural commodities.

DES produces an annual publication entitled 'Agricultural Statistics at a Glance'. The publication also covers data relating to agriculture on national income and social economic indicators, outlay and expenditure, capital formation, area, production and yield of principal crops, cost estimates, procurement by public agencies, per capita net availability, consumption and stocks, import/ export, tariff, wholesale price index, land use statistics, census of agricultural inputs, wages of agricultural workers, livestock population and fish production in country, inter-alia. This publication is based on the data collected which are compiled by the Directorate of Economic and Statistics and various Ministries and Departments in the Government of India. Agricultural Statistics at a Glance is available in the website at http://agricoop.nic.in and http://dacnet.nic.in/eands. The E-mail address of the contact person is advisor.vk@nic. in. The E-mail address of other contact person for land use statistics is madhu.bala@nic.in. The website address of the DES is http://dacnet.nic.in/eands. The E-mail address of the present ESA who is the key contact person of the DES is neog@nic.in In addition to the Directorate of Economics and Statistics of the Department of

Agriculture, the other major departments at the national (all-India) level which collect and compile data on various items relating to agricultural statistics and allied sectors, are as follows:

(a) Central Statistical Organization (CSO)

The CSO was established in the year 1951. The CSO is responsible for coordination of statistical activities in the country, and evolving and maintaining statistical standards. Its activities consist of National Income Accounting, including the agriculture sector, conduct of Annual Survey of Industries, Economic Censuses and follow-up surveys, compilation of Index of Industrial Production, as well as Consumer Price Indices for Urban Non-Manual Employees, Human Development Statistics, Gender Statistics; preparation of Five Year Plan relating to Development of Statistics in the States and Union Territories; imparting training on Official Statistics, dissemination of statistical information, work relating to trade, energy, construction and environment statistics, revision of National Industrial Classification, etc.

The CSO compiles data on value of crop production, livestock, poultry production, fishery production and forest produce. It also compiles, inter-alia, data on value of output, value of inputs, gross value added, and gross domestic product from agriculture and allied sectors. The data on crop production are supplied basically by the ESA.

The CSO is headed by the Director-General who is assisted by 2 Additional Director-Generals and 4 Deputy Director Generals, Directors & Joint Directors and other supporting staff. They are all from the Statistics discipline. The information are available at the website www.mospi.nic.in and the e-mail address is dgcso@nic.in. The contact person, at present, is the Deputy Director General, who is the nodal officer. His E-mail address is surindera@nic.in. It is to be mentioned that data on separate budgetary allocation for the CSO in the area of agricultural statistics as such are not available. It is to be mentioned that periodic statistical data are also released through Press Note from time to time and can be accessed from the website www.pib.nic.in.

(b) Department of Animal Husbandry, Dairying and Fisheries

This Department in its present form came into existence on January 02, 1991. The organizational structure consists of Adviser (Statistics) as the overall in-charge of animal husbandry statistics, including livestock census. It collects and compiles, among other things, quantitative data on livestock population and products as of 2003 which include cattle, poultry, wool, meat, and meat products. Further, it furnishes production data on milk, egg, wool, fish & fish seed. The website of this Department is http://dadf.gov.in. It has a web-based system for accessing State-wise and district-wise livestock census data and agricultural machinery of the country. Data on marine fisheries resources, inland water resources and livestock products are available up to 2004-05. The sources of these data are the State (sub-national) and Union Territory Governments. At the national (all-India) level, all matters relating to Fisheries are looked after by a Joint Secretary in the said Department. It may be mentioned that data on separate budgetary allocation for the Statistical Wing as such are not available.

(c) National Sample Survey Organization (NSSO)

The Directorate of National Sample Survey was established in 1950. However, the NSSO in its present form was established in the year 1970. Organizational structure of the NSSO consists of Director General & Chief Executive Officer, having four divisions, namely, Survey Design and Research Division (SDRD), Field Operations Division (FOD), Data Processing Division (DPD) and Coordination & Publication Division (CPD). A Deputy Director General heads each division except FOD. An Additional Director General heads FOD. It is mentioned that in the FOD, there is Agriculture Statistics (AS) Wing. All these are manned by personnel of Statistics discipline. Its role is to make survey design, conduct fieldwork, process data, publish report and maintain data warehouse and dissemination among other things. The Wing has 97 professional staff and 35 support staff. It collects data on food consumption in both rural and urban households. Surveys are conducted at national and sub-national levels to collect data on consumption

expenditure of farm households. It collects details of item-wise average quantity and value of consumption per person of farm households at national and sub-national levels. It collects data on rural employment. The data on financial resources in such operations are not available. The e-mail address of the present contact person is adgfod@sify.com.

(d) Directorate General of Commercial Intelligence and Statistics (DGCI&S)

The DGCI&S collects and compiles, inter alia, data on the quantity and value of export and import of all commodities including agricultural items. Data are collected from customs administrative records. These are available at the website http://dgciskol.gov.in. The DGCI&S is headed by the Director General.

The contact persons are the Director General and other Directors, whose E-mail addresses of the present incumbents are given below:

(i) dg@dgcis.gov.in
(ii) pcs@dgcis.gov.in
(iii) gmukherjee.dgcis@nic.in
(iv) dtr@dgcis.gov.in
(v) jp.dgcis@nic.in

It may be mentioned that data on separate budgetary allocation for the DGCI&S in the area of agricultural statistics are not available.

(e) Ministry of Rural Development

The National Institute of Rural Development (NIRD), an autonomous body, under the Ministry of Rural Development of the Government of India collects and compiles statistics relating to the rural sector. The NIRD is headed by the Director General. Its website is www.nird.org.in. Its E-mail address is ciec@nird.gov.in. The NIRD publishes "Rural Development Statistics", which contains data on rural/urban population, vital statistics, population projections, employment, unemployment, literacy and migration, wages and debt, consumption and poverty, agriculture and allied activities, irrigation and other agriculture inputs, rural development programmes, rural infrastructure etc. The latest publication is for the year 2004-05. The Ministry of Rural Development, Government of India in its website www.rural.nic.in publishes a lot of statistics on the rural sector of Indian economy. On the other hand, http://rural.nic.in is an umbrella portal.

(f) Office of the Registrar General of India

It collects data on human population of the country by age, sex, rural, urban location, demographic characteristics of the population, work force by activity status and village level data. It provides comprehensive data profile on village authorities such as rural population including agricultural workers, number of cultivators etc. Data are available in the Data Dissemination Wing of the office. The website is http://www.censusindia.net/. The e-mail addresses are rgoffice@censusindia.net and rgoffice@censusindia.gov.in.

(g) Ministry of Environment and Forests

The Department of Environment was established in 1980, which became the Ministry of Environment and Forests in 1985. The Acts and the Rules are available in the website http://edugreen.teri.res.in/explore/laws.htm. It provides forestry and environment statistics including forest produce in the country at the national and sub-national levels. A lot of data and information are available in the compendium of "Environmental Statistics India 2003" published in May, 2005 by the Ministry of Statistics & Programme Implementation and is also available in the website: www.mospi.nic.in.

(h) Reserve Bank of India (RBI)

The RBI also generates various statistics including that on Agriculture. These are accessible from its website on internet URL www.rbi.org.in. An important annual publication of the RBI is the "Handbook of Statistics on Indian Economy" which covers among other things, statistics on national income, output and prices (including agriculture), money and banking, financial markets, public finance, trade and balance of payment, currency and finance and socio-economic indicators.

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AN OVERVIEW OF STATE INITIATIVES IN AGRICULTURE

Pawan Kumar Tiwari

Various positive changes have taken in the field of agriculture since independence. The country which was not self sufficient in foodgrains has now achieved self sufficiency. A number of reforms have been initiated inside the country in the agricultural sector which has brought both quantitative and qualitative changes in agriculture. The implementation of various central schemes and programs has brought qualitative improvement, as it has laid down the foundation for modernization of agriculture in India, and in terms of numbers, it has resulted in sharp increase in productivity of land and production of food grains.

The land reforms carried out so far include- abolition of zamidary system, Tenancy reforms, Ceiling and land ownership, consolidation of holding (which were more small and scattered) and co-operative farming. These policies played an important role in bringing a revolutionary change in the agricultural sector apart from paving the way for rural development. All the states have enacted land reform laws. With the abolition of Zamindary system more than 22 million cultivators have come in direct contact with the state. Tenancy reforms have helped the cultivators to acquire land ownership after fulfilling certain conditions. Another significant step is the distribution of surplus land over the ceiling among the poor and landless farmers basically those belonging to schedule castes and schedule tribes. More than 50 lakh acres of land has been distributed so far apart from distributing waste lands to the poor farmers. Laws have also been enacted for the consolidation of small holdings which have paved the way for scientific and efficient farming leading to increase in productivity. According to an estimate, about 55 million hectors of land has been consolidated so far.

Supply of Inputs:

Mere distribution of land to the poor peoples was not enough to increase productivity; the transformation of existing backward agricultural system is very much dependent on the availability of inputs. Adoption of agricultural subsidy policy has provided various inputs like power Trailer, Tractors, and fertilizers to the farmers in general and poor farmers in particulars at subsidized prices. Providing subsidy for the farmers has played a great role in encouraging the farmers to adopt modern technologies in agriculture.

Infrastructural Facilities: -

Existence of infrastructural facilities has its own contribution in agriculture. Infrastructure facilities have been expanded to provide education and information to the farmers a part from providing credit. An important measure was the expansion of institutional credit to reforms through co-operative and commercial banks. 14 commercial banks were nationalized in 1969 while other 6 commercial banks in 1980. Nationalized banks have played a significant role in providing credit to the farmers. The establishment of Gramin Vikash Bank, Regional Rural Banks and National Bank of Agriculture and Rural Development (NABARD) has added a golden chapter in the history of agriculture development.

To regulate the price of a number of agricultural commodities like wheat, Paddy etc. the Commission for Agricultural Cost and Price (CACP) was established by the Government. CACP has taken positive steps to insure fair return to the farmers. India's enthusiasm towards modernization of agriculture in other policy measures which includes stress on agricultural strategy and technologies. To increase agriculture productivity agricultural research Institutes were established in the country. The research Institute developed High yielding seeds which brought a great change in the agricultural sector. The high yielding variety programme got tremendous success in the country.

New Initiatives at a Glance

Agricultural Credit which was introduced earlier got a new impetus in August 1998 with the introduction of Kishan Credit Card Scheme. KCC was introduced to provide adequate and timely credit support to the farmers from the banking system. According to an estimate about 895 lakh KCCs have been issued till December 2010.Now farmers can receive crop loan up to a principal amount of 3 lakh, at 7% rate of interest. Another important step was the implementation of the rehabilitation package for 31 suicide prone districts in the states of Andhra Pradesh, Karnataka and Maharastra. An amount of Rs 16,953 crore has been released under this package till the end of 2009.

The Government of India has adopted the National Auricular Policy 2000, with the objective of improving the agricultural sector. The policy is multi dimensional covering several aspects agricultural sector.

Food Security Mission

In the recent years some new initiatives have been adopted to boost the agricultural sector and to cope up with the changing circumstances. In order to achieve food security by increasing the production of rice, wheat and pulses the National Food Security Mission was launched in rabi 2007-08. The National Food Security Mission has been implemented in 479 identified districts of 17 states. It put more emphasis on the adoption of the new farm practices in a more scientific way. The adoption of new farm practices has been encouraged by distributing hybrid rice, wheat and pulses, soil fertilizers, and modern machines like power trailer etc. NFSM has made significant impact since its inception, reflected in increase in production of rice and wheat.

The Rashtriya Krishi Vikash Yojana (RKVY) a flagship scheme of the Central government was launched in 2007 to mark an improvement in agriculture and allied sectors by formulating new strategies to meet the needs of the farmers. The scheme has an outlay Rs 25000 for the plan period to provide central assistance to the states. The eleventh plan fixed a target of achieving a 4% growth rate in agricultural sector. About 40% of the approved funds have been utilized for improving the targeted sectors.

The Macro Management of Agriculture scheme was formulated in 2000-01. It was an attempt to bring 27 centrally sponsored schemes related to cooperatives, crops production, fertilizer, seeds etc., together under one umbrella. It was revised during 2008-09 to assist the state governments (including Union Territory) to enhance the agricultural production by providing financial assistance.

Another important initiative is the restructuring of the oilseeds, pulses, oil palm and maize development program into one Centrally Sponsored Integrated Scheme of Oilseeds, Pulses, Oil Palm and Maize which is being implemented in15 major states for oilseeds and pulses, 15 states for maize and

8 states for oil palm. Under ISOPOM the Oil Palm Development Program is being implemented in the states of Andhra Pradesh, Karnataka, Tamilnadu, Gujarat, Go, Orrisa, Kerala, Tripura, Assam, and Mizoram. The Maize Development Program under ISOPOM is being implemented in 15 States. The area under Maize cultivation is 81.80 lakh ha with production of 192.80 lakh tones.

Increase in Production & Attainment of Self Sufficiency

The growth rate of agriculture output is higher than the population growth. It has been found that the average production for each plan period has been higher as compared to the average of the proceeding plan. As a result of the introduction of new technologies the production of certain food grains has increased tremendously. The production of Wheat has increased from 10.4 million tones in 1965-66 to 78.4 millions tones inn 2007-08. The production of rice has increased from 30.6 million tones in 1965-66 to 96.4 million tones in 2007-08 (Dep't. Of Agriculture & Cooperation). The total production of food grains has increased greatly making India self sufficient in food grains. After china India has become world's second largest producer of rice.

Another improvement which is noticeable is the increase in the total capacity. The irrigation potential has increased from 22.6 million hectares in 1950 to 94.7 million hectares in 1999-2000 (Dep't. of Agriculture & Cooperatives). India has become the leading country in the world in respect of existing irrigation facilities.

Diversification of Agriculture

Another progress in agricultural sector is diversification. The share of output of non-crop sectors like forestry and animal husbandry in the total agricultural output is on the increase. There has been a change in cropping pattern and attitude of the farmers. The dissemination of new form technologies through mass media has played an important role.

Apart from these major changes certain other changes are also visible in the country. The farmers are now moving towards nonfood grains crops, Production of Commercial crops like sugar cane, and Cotton has marked a remarkable increase with the help of financial credit (loan).

In nutshell it can be said that the agricultural reforms has improved the agrarian system. The abolition of zamindary system and tenancy legislation has played a great role in ending the age old exploitation of the poor farmers by the zamindars. Now a days the farmers have come in direct contact with the Government. As a whole the condition of the farmers in general and poor farmers in particular has improved. Some tenants have become the owners of the land under the policy of land to the tiller.

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सत्यमेव जयते
Government of India

Prime Minister's New 15 Point Programme for the Welfare of Minorities

Improving Access To Education

'Now that I have financial help I can fulfill my dre

An inclusive agenda for Minorities

- 60 ITIs located in Minority Concentration Districts are being upgraded under PM's 15 Point Pro
- 67 lakh pre-matric scholarships, 11 lakh post-matric and 1.20 lakh merit-cum-means scholarsh
- 27 Kasturba Gandhi Balika Vidyalayas sanctioned for Minority Concentration Districts

Smt. Sonia Gandhi
Chairperson, UPA

Dr. Manmohan Singh
Prime Minister

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oint Programme
holarships awarded so far

A VISION OF
BHARAT NIRMAN
DREAMS BEING REALIZED

PINE BRIQUETTS TO REDUCE CARBON FOOTPRINTS

Rajshekhar Pant

Black carbon, caution the environmentalists, is probably the third largest cause of global warming, which is believed to have been contributing quite considerably to the rapid glacial shrinkage across the length and breadth of the Himalayas. To unveil the apocalypses even closer homes, Dr Smith a researcher calls the smoke from chullahs "toxic tsunami" with the degree of hazardous pollutants, "much higher than living on toxic waste dumps." As per a study released in Lancet Journal distributing fifteen million improved stoves a year around in India for ten years would reduce premature deaths by more than 17%.

A welcome initiative in the referred backdrop comes from an ambitious duo in the remote mountain village in Uttarakhand. The founder proprietor of Rural Renewable Urja Solutions, Brijash Rawat, an IITian and his New York based sibling are fast replacing coal fired ovens and LPG

cylinders in towns and rural areas with health conducive, eco-friendly and more efficient gasified commercial chullahs that run on the briquettes of pine needles.

Known since the days of world war, the use of pine needle briquettes has been a commercially under exploited venture. Rawats through their exhaustive research now have the advantage of pinpointing the three positive fallouts of using biomass briquettes –health, local employment and environmental preservation.

Rawats have sold their concept to a Switzerland based carbon credit company – My Climate, which in turn intends to market it to airline passengers wishing to lessen their carbon footprints. At home while marketing their green technology among their clients like owners of eateries, canteen contractors and caterers, what they speak of is fuel efficiency and cost effectiveness.

Supposed to be a gun powder keg in the central Himalayan forests, especially during the fire season starting from March onwards, the pine needles in the days to come are all set to become a potential source for the state to earn carbon credits besides enabling the hill people to add-on to their coffers. In addition to the strides made by the carbon credit project initiated by the twin Rawat brothers -now the state government is popularizing the technique of making biomass briquettes under a project titled as Gramya. It is to be noted here that save the occasional head loading for bedding material for cattle, the leaf litter of pine carpeting lakhs of ha. in Himalayan forests keeps on lying apparently as a waste. The forest department reportedly spends a substantial amount every year in burning it at least along the fire lines. M H Khan, the chief project officer of Gramya speaks of two dozen of self help groups now being under the umbrella of this project. The processing of briquettes entails anaerobic combustion of needles in a special drum to turn it into charcoal. It is kneaded then in a 10% solution of dung and the mixture is finally put in the moulding machine to obtain smokeless briquettes. It does not leave much of ash behind and 600gms of it may last for around 90 minutes. Cost wise also it is reported to be just 1/3 of the LPG. Dr JC Pandey an environmentalist sees the potential of a big breakthrough in it since its acceptability may result in reducing the state's carbon footprint to a great extent.

Pine needles in the days to come are all set to become a potential source for the state to earn carbon credits besides enabling the hill people to add-on to their coffers

Under this project the members of the SHG are provided with the necessary equipments after a training session. At Chamoli in garhwal women have been contributing Rs 25 each per month to pay off the liability of power etc consumed in production. In the far-off Gangolohat region of Kumaon one Bhagat Singh supplemented his income by an additional 10,000 through pine briquettes. In this part the bio mass fuel has got a comfortable acceptability among the owners of small eateries, in households and among pressmen. In Champawat district at village Kalmedi 20 women are processing this energy efficient fuel collectively. In Almora region Rajesh Pande and Ramdutt Belwal have inspired quite a few small green entrepreneurs by way of popularizing it in the local market. In a short span Belwal has to his credit the production of 5 qtls of briquettes. In Gangolihat region alone 32 machines and 100 stoves are reported to have been functional. The project is operational in 76 well identified micro watersheds of 18 blocks in 11 districts of Uttarakhand.

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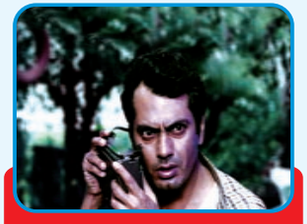
NATIONAL DISASTER MANAGEMENT AUTHORITY

Government of India

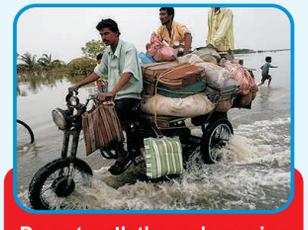


Listen to the radio or television for information

Keep your safety kit with medicines, identity papers, dry food, torch, etc. ready.

Disconnect electrical appliances. Do not touch electrical equipments if you are wet or standing in water

Untie domestic cattle before leaving the house



Do not walk through moving water. If you have to walk in water, walk where the water is not moving

Leave for safe (higher) place in time

Drink only boiled or chlorinated water

davp 19106/13/0013/1112

PROVISIONING PESA: STILL A LONG WAY TO GO

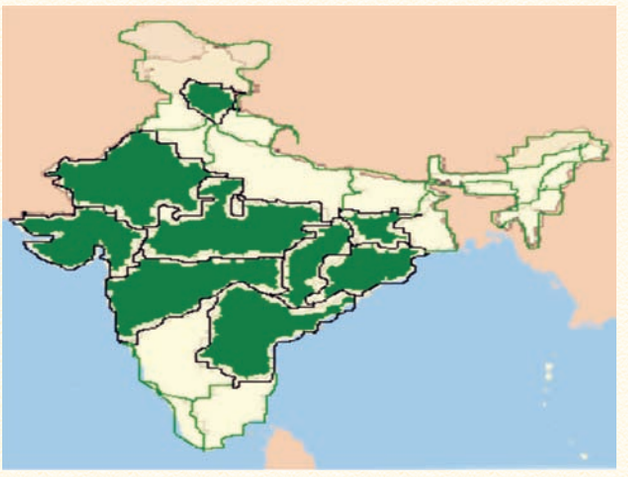
Anupam Hazra

The Provision of the Panchayat Extension to the Schedule Areas (PESA) Act, 1996 is one of the most progressive legislations for tribal regions for self-governance and recognizing the traditional rights of tribal communities over their natural resources. The provisions of this Act are far reaching in their implications, yet there are several problems with putting the provisions of the Act in place. All concerned States have enacted their State legislations in pursuance with this central Act. Efforts have been made by the Central Government also to amend certain Act, Rules and policies to the tune of this Act. But still, there is lot to be done by State Governments for turning the ideal of tribal self-rule into reality

Background of PESA:

Tribes, the indigenous minority of the population of India, constitute 8.2% (over 84 million people) of the nation's total population. The bulk of the tribal population lives in the Fifth Schedule and Sixth Schedule Areas. These are described in the Constitution of India as Scheduled Areas and Tribal Areas respectively. These tribal communities have their own rich tradition and culture. Predominantly distributed in the hilly and forest regions, they are very much dependant on nature. They have developed over centuries an organic relationship with nature and they are generally referred as the protector of nature. Evidently, they deserve the right over the natural resources and their management. Their traditional decision making process by the community is truly democratic in nature. Women are also empowered in these traditional equity based societies. Based on these characteristics, these societies demand Panchayati Raj system which is not in conflict with their own culture and tradition. Realizing the felt need Government of India required making provision in the Constitution of India beyond 73rd Constitutional Amendment Act, 1992.

With regard to Fifth Scheduled Areas, under Article 243M of the Constitution of India, Parliament is required to pass legislation for extending the provision of Part IX of these areas. Accordingly, based on the recommendation of the Duleep Singh Bhuria Committee, The Provision of the Panchayat Extension to The Scheduled Areas (PESA) Act was passed by the Parliament and came into effect on 24 December 1996 for areas mentioned in the Fifth Schedule of the Constitution of India.



Main features of the Act:

The Act defines a village as ordinarily consisting of a habitation or a group of habitations or a hamlet or a group of hamlets comprising a community and managing its affairs in accordance with traditions and customs. Every village is to have a Gram Sabha, which is competent to safeguard and preserve the traditions and customs of the people, their cultural identity, community resources and customary modes of dispute resolution. PESA enjoins upon the State the obligation to consult tribal communities and their elected representatives in evolving criteria for the constitution of village Panchayats and Gram Sabhas in Schedule V Areas and to ensure that tribal communities, on the basis of ethnic identities, are constituted into different Gram Sabhas even within a Gram Panchayat area.

PESA stipulates that reservation for Scheduled Tribes shall not be less than half of the total number of seats and that all seats of Chairpersons of Panchayats at all levels shall be reserved for the Scheduled Tribes. It also provides for the State government to nominate persons belonging to such Scheduled Tribes who have no representation in the Panchayat at the intermediate or the district Panchayat level to an extent of one-tenth of the total numbers to be elected to that Panchayat.

A duty has been cast on the State legislatures to ensure that the Gram Sabhas and Panchayats at the appropriate level are endowed specifically with such powers and authority as to enable them to function as institutions of self-government. These are:

(a) Power to enforce prohibition;

(b) Ownership of minor forest produce;

(c) Power to prevent alienation of land;

(d) Power to manage village markets;

(e) Power to exercise control over money lending;

(f) Power to exercise control over institutions and functionaries in all social sectors; and

(g) Power to control local plans and resources for such plans including tribal sub-plans.

The Act also prohibits Panchayats at the higher level to assume the powers and authority of any Panchayat at the lower level. It also provides that any provision of any law, which is inconsistent with its provisions, shall cease to be in force at the expiry of one year from the date on which the Act receives the assent of the President (24.12.1996).

Under PESA, Gram Sabhas and Panchayats are given wide functions, powers and responsibilities as follows:

(a) Mandatory executive functions and responsibilities:

Panchayats at the village level has to take approval of all plans, programmes and projects

from the Gram Sabhas before they take them up for implementation. Gram Sabha shall also identify beneficiaries of poverty alleviation and other programmes and issue certification of utilization of funds by the Panchayat at the village level for the above programmes. Panchayats shall undertake planning and management of minor water bodies.

(b) Mandatory consultations:

The Gram Sabha or the Panchayat at the appropriate level shall always be consulted before acquisition of land in the Scheduled Areas for development projects and before resettling rehabilitated persons affected by such projects.

(c) Mandatory recommendations:

The recommendations of the Gram Sabha or the Panchayat at the appropriate level are mandatorily required prior to grant of prospecting license or mining lease for minor minerals. Similarly, prior recommendation is required for grant of concession for the exploitation of minor minerals by auction.

Current Scenario of Indian States:

While all nine States have enacted requisite compliance legislations by amending the respective Panchayati Raj Acts, certain gaps still exist. Further, most States are also yet to amend the subject laws and rules, such as those relating to money lending, forest and minor forest produce, mining and excise. Though the provisions in such laws that are inconsistent with those in PESA are legally invalid after December 12, 1997, they continue to be followed by departments and their functionaries for want of clear instruction and guideline. Vital issues such as the ownership of minor forest produce,

planning and management of minor water bodies and prevention of alienation of tribal lands, which have been recognized as traditional rights in PESA, are yet to be received the necessary corrective action. Powers statutorily devolved to the Gram Sabha and Panchayats are not supplemented by the transfer of funds and functionaries resulting in the non-existence of such powers. The gaps identified between the central legislation and provisioning at the State level may be summarized as follows:

1. Continuance of existing laws relating to money lending, forest, excise, etc., which are not in consonance with the letter and spirit of PESA;
2. Incomplete transfer of ownership of minor forest produce and planning and management of minor water bodies to Gram Panchayats and Gram Sabhas;
3. Inadequate action on preventing alienation of tribal lands recognized in PESA to be the traditional rights of tribals living in the Scheduled Areas; and
4 As is the case with Panchayati Raj in general, powers statutorily devolved upon the Gram Sabha and the Panchayat not being matched by concomitant transfer of funds and functionaries, resulting in the non-exercise of such powers.

Consequently, de facto compliance with PESA remains incomplete and perfunctory. Over the years, States have been urged repeatedly to expedite compliance with PESA and the matter has been discussed in the meeting of Ministry of Panchayati Raj (MoPR) and Performance Review Committees, but too little avail as revealed by several evaluations commissioned before 2004 by the Ministry of Rural Development.

Role of the Central Government:

Few central le gislations and national policies are acting as the stumbling block in the way of the implementation of the Act. Despite an explicit provision in PESA that any provision of any law relating to Panchayats which is inconsistent with its provisions would cease to have effect after the expiry of one year from the date on which it received Presidential assent, a number of such laws continue to be in force. Despite efforts, little progress has been made in this regard. Urgent steps need to be taken, in concert with the Ministry of Law and Justice, to harmonize all relevant central legislation with the provisions of PESA. Among the laws that warrant particular attention are the following:

(a) The Land Acquisition Act, 1894
(b) Mines and Minerals (Development and Regulation) Act, 1957
(c) The Indian Forest Act, 1927
(d) The Forest Conservation Act, 1980
(e) The Indian Registration Act, 1908.

Apart from the aforesaid Acts, following national policies are very much in conflict with the provision of the PESA and require urgent re-examination in this regard:

(a) The National Policy on Resettlement and Rehabilitation of Project Affected Persons, 2003
(b) The National Water Policy, 2002
(c) The National Minerals Policy, 2003
(d) The National Forest Policy, 1988
(e) The Wild Life Conservation Strategy, 2002
(f) The National Environment Policy, 2006.

As per recommendations of the Working Group on Democratic Decentra lization, following steps may be taken by the Central Government:

(a) Issuing of specific directions to States for implementations of PESA in letter and spirit on the basis of Governor's report on Schedule V areas. Ministry of Panchayati Raj could provide a format for Governor's report from each State.

(b) Incorporation of suggested changes in Tribal Rights Bill to further strengthen implementation of PESA. This will require creating a special institutional mechanism for coordination between the Ministry of Panchayati Raj and Tribal Welfare Ministry.

(c) Coordination of the monitoring of implementation of PESA and BRGF by a Task Force led by the Planning Commission, serviced by the Ministry of Panchayati Raj, Government of India.

(d) PESA States to have a cell to monitor its implementation and provide support towards these, a small annual budget (Rs 5 Crore per annum per state, in States of Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Orissa and Rajasthan) should be allocated towards this end.

(e) As part of the larger exercise directed by the Cabinet Secretary that all Ministries / Departments ought to review and recast their CSSs to harmonize them with Panchayati Raj, a more co-ordinated and inclusive effort may be made to bring all CSSs / and Central Schemes within the framework of PESA, Suitable changes in the guidelines for all such schemes need to be brought out before the Eleventh Plan.

If the Central Government takes necessary steps to harmonize these central legislations as well as national policies it will go a long way towards protecting and safeguarding the legitimate interests of tribals in Fifth Schedule Areas and would contribute meaningfully to their welfare and development. Another most important thing is that such initiatives by the Central Government will also send an appropriate signal to State governments, motivating them to implement the provisions of PESA with greater vigour and sense of purpose.

Role of the State Governments:

It has already been mentioned that all nine States having Scheduled Areas have enacted or amended their State Acts but not in consonance with the letter and spirit of the Central PESA. The comparative analysis of the PESA State Acts and the PESA Central Act yields the fact that the PESA Act has been much diluted in the process of ratification by the states, and the much of the powers of the Gram Sabha have been given to the district administration, or to the Zila Parishad. However, it was pointed out, that there are Provisions in the Central Act, which clearly state that nothing in the State Acts can be inconsistent with certain powers provided to Gram Sabhas in Scheduled areas which enable them to take decisions over their own resources, and protect their identity, and allow them to restore alienated tribal land to its lawful owner.

As per recommendations of the Working Group on Democratic Decentralization, following steps should immediately be taken by the States:

(a) State law requires thorough analysis and harmonization with PESA

(b) Annual Status Reports must be prepared by each State that has Scheduled V Areas, on the current status of implementation.

(c) Programmes such as the BRGF, which base themselves on local planning and implementation through Panchayats, should be used to catalyze the full implementation of PESA in States.

Recent initiatives taken by the Central Government:

- Ministry of Panchayati Raj organized the Third Round Table Conference of Pan chayati Raj Ministers in September, 2004 in Raipur. The State Ministers there agreed to enforce the provisions of PESA and also to undertake a wider consultation with other government departments so as to harmonize the provisions of concerned laws with the aims and objectives of PESA.
- Regular communications to Chief Secretaries of States and interaction between officials of Central and State Governments are being undertaken with a view to ensure better implementation and to harmonize relevant subject laws in line with PESA provisions.
- Central Ministries/Departments and the Planning Commission have been engaged in an exercise to rationalize policies in CSSs dealing with matters listed in the Eleventh Schedule of the Constitution. The larger exercise directed by the Cabinet Secretary that all Ministries/Departments ought to review and recast their CSSs to harmonize them with Panchayati Raj assumes particular significance in the light of implementation of PESA.
- The Ministry of Panchayati Raj has also entrusted a task to Indian Law Institute to formulate appropriate amendments in the State laws concerned, with a view to assist State Governments to carrying out this exercise in consultation with their respective Departments of Law.
- To maintain the impetus on implementation of PESA, the Ministry convened on 14 July 2006 a meeting of State Secretaries of Departments of Panchayati Raj, Tribal Development Commissioners of Tribal Area Development, Heads of Tribal Research Institutes and Tribal Development Corporations and representatives of Central Ministries.
- MoPR constituted three sub-committees: (i) B.D.Sharma sub-committee on "Model Guideline to vest Gram Sabhas with powers as envisaged in PESA" (ii) Raghav Chandra sub-committee on "Land Alienation, Displacement, Rehabilitation & Resettlement" and (iii) A.K.Sharma sub-committee on "Minor Forest Produce". All the sub-committees had submitted their reports and recommendations and these were forwarded to the concerned States.
- Pursuant to the report of the B.D.Sharma sub-committee, Model Guideline called Gram Sabha Niyam Samhita were drafted and forwarded to the PESA States and Tribal Research Institutes.

Some Major Achievements of Different States of India:

State	Major Achievements
Orissa	The Department of Panchayati Raj has suggested the formation of three-tier Co-operative Societies at the Village, Block and District level for procurement of Minor Forest Produce (MFP) as well as the formation of a Regulatory Authority at the State level.
Chhattisgarh	▪ The provisions for the Gram Sabha to approve programmes for social and economic development to certify utilization of funds for the same in the State PR Act have been amended in line with the PESA. ▪ Mining rules in the Mining Act have been amended (still not conforming PESA) ▪ The State Excise Acts give power to the Gram Sabha to regulate the setting up of new liquor vendor through the Gram Sabha does not have control over the existing units. ▪ Tribals have formed cooperatives at village level for collection of MFP whereas outsiders do not have right to collect it. ▪ The State land revenue code provides power to Gram Sabha to prevent alienation of land and to restore unlawfully alienated land of the STs. ▪ Control over the village Haat Bazaars vest with the Gram Sabha or Gram Panchayat.
Himachal Pradesh	The Himachal Pradesh Sale of Timber Rules, 1969 has been amended to include consultation with the Panchayats before the depot is registered by DFO in a Scheduled Area.
Madhya Pradesh	▪ The State Government has made necessary amendment in five important laws, namely Sate PR Act, The Excise Act, The Land Revenue Code, The Mines and Mineral Rules and Gram Nyayalaya Adhiniyam. ▪ The Money Lenders (Amendment) Act, 2000 of the State prohibits the registration of money lenders in Scheduled Areas.
Andhra Pradesh	▪ The State Government has made The Andhra Pradesh Panchayati Raj (Extension to Scheduled Areas) Rules, 2007 which is yet to be notified. ▪ The State Government has framed necessary rules regarding reservation of seats and office of Gram Panchayat.
Maharashtra	▪ The State Government has incorporated the issue of MFP by the amendment of State PR Act. ▪ The State Government has given power to the Gram Sabha with regard to alienation of land of the persons belonging to the STs.
Rajasthan	The State Government has amended the Rajasthan Land Revenue Act, 1956, Rajasthan Money Lenders Act, 1963 and Rajasthan Mineral Concession Rules, 1986.

The Road Ahead:

As per the recommendation of different Working Groups engaged by the Central Government, the following measures may be taken by all concerned:

1. The Ministry of Panchayati Raj should immediately finalize and issue guidelines for implementation of PESA and suggest specific State related provisions and guidelines.
2. A definite time frame must be mandated to States to implement these suggestions.
3. The Ministry must address a copy of its guidelines to the Ministry of Tribal Affairs as well as the Planning Commission. The Ministries of Panchayati Raj, Tribal Affairs and the Planning Commission should look into the implementation of PESA at the time of finalization of States Plans in order to ensure that the recommendations are dovetailed into the State plans and Five Year Plan.
4. If any State is not implementing the provisions of PESA in letter and spirit, the Government of India should issue specific directions in accordance with its power to issue directions under proviso 3 of part A of the Fifth Schedule.
5. The Central Government should direct the States to gear up the process of amendments to existing laws in order to conform to PESA.
6. One of the ways in which implementation of PESA provisions can be ensured at the grass root level is to establish a forum at the Central level so that violation of the provisions of the enactment, could be brought before this forum and the deviations highlighted and necessary correctives applied.
7. Practice of taking regular annual reports from Governors must be given due importance. Such reports should be published forthwith and placed in the public domain.
8. Even though women are important participants in Panchayati Raj, in tribal areas, traditional tribal councils are predominantly male. Therefore special steps need to be taken to ensure that women participate fully in tribal governance. In order to ensure that women are not marginalized in meetings of Gram Sabha, provisions in PESA rules and related guidelines should ensure that for quorum of a meeting at least 33% of the Gram Sabha ought to consist of women.

Bibliography:

1. The Provision of Panchayat (Extension to Scheduled Areas) Act, 1996.
2. The Constitution of India document.
3. The State of Panchayati Raj Report, 2006-07, Ministry of Panchayati Raj, Government of India.
4. The State of Panchayats 2007-08: An Independent Assessment (SoPR 2007-08), Ministry of Panchayati Raj, Government of India.
5. Report of the Working Group on Democratic Decentralization & PRIs, by Planning Commission and Ministry of Panchayati Raj, Government of India, November 2006.
6. "Planning at the Grass Root Level", Report of the Expert Group, Ministry of Panchayati Raj, Government of India, March 2006.
7. "Inclusive Growth through Inclusive Governance", Fifteenth Anniversary Charter on Panchayati Raj, April 2008.
8. Study on EWR in Panchayati Raj Institutions, Ministry of Panchayati Raj, Government of India, April 2008.
9. Annual Report 2009-10, Ministry of Panchayati Raj, Government of India.

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JHUMIAS OF TRIPURA HILLS- AFFECTS AND PROSPECTS

Dr. P. K. Paul and Dr. P. P. Paul

Two types of agricultural practices are very common viz., the usual method of growing paddy in the settled plain land cultivation and shifting cultivation in the hilly areas called jhuming. As against settled agriculture, shifting cultivation system is being practiced by the hilly tribes of the Eastern and North Eastern region and the type of cultivation is known as jhuming or podo cultivation or fire farming or slash and burn agriculture. Presently, it is being practiced in the North Eastern Hill Region (Arunachal Pradesh, Assam, Meghalaya, Nagaland, Manipur, Mizoram, Tripura) and parts of hilly areas of Orissa, Madhya Pradesh, Andhra Pradesh etc.

In Tripura, about 2.20 lakh hectares of the total area comes under shifting cultivation involving about 40,000 nos. of jhumia (or shifting cultivators) families. The practice of jhuming by the jhumia tribal communities viz., Halam, Jamatia, Kuki, Noatia, Santal, Tripuri, Reang, Mog, Chakma etc. has been in existence since time immemorial in the sloping hilly tracts of the state and the reasons for continuance of the practice are linked up with ecological, socio-economic and cultural factors including lack of communication leading to physiographic isolation. The main characteristics of this cultivation are selection of site, slash and burn, use of simple farm implements, proper watch and ward, merry making, abandoning the land, rotation of fields etc. In general the jhumias cultivate different mixed crops dominated by paddy, maize, millet, cotton, pumpkins, chillies, mesta, cucumbers, yams etc.

Jhum cycles and affects

After crop harvest, the land is left fallow and the jhumias move to a new piece of land. In the earlier days, they used to move from one place to another and return to the former area after about 10 to 15 years or more. In the process a cycle is formed referred to as 'jhjum cycle' or 'shifting cultivation cycle'. Though this system of cultivation was considered good enough when it emerged, yet today, increase in human population, decrease of forest cover, along with decrease in land : man ratio at an alarming rate, has forced the jhumias to reduce jhum (shifting) cycle (01 to 02 years) leading to destruction of forest wealth, loss of soil cover, siltation of reservoirs / rivers resulting floods in the plains, etc. considering this system of farming to be one of the prime unscientific, irrational system of cultivation. Thus they are compelled to move within the same land area year after year resulting into decrease of soil health and loss. Several efforts have been taken up by the government and other entrepreneurs to rehabilitate the jhumias. But it seems, lack of proper transport and communication, physiographical isolation, inadequate technical know-how, marketing facilities along with their distressed economic condition are the prime hindrances towards jhumia rehabilitation.

A typical bamboo hut made by Jhumias

Prospects

Valuable plants usually do not regenerate after the jhum cycle is over and the land is fallowed. There are reports on the ecological impact on shifting cultivation on Forested Eco-System indicating that the early colonizers after short jhum cycle are primarily weeds only such as Eupatorium odoratum, E. adenophorum, Mikania nicrantha etc. Under a longer jhum cycle the early colonizers in the abandoned shifting cultivation land are bamboos particularly the species Dendrocalymus hamiltonii. Sporadic presence of herbs, shrubs and trees are also seen to exist in the shifting cultivated areas .

Conclusion

It is seen that these sporadic plants (herbs, shrubs, trees) have different types of uses which if highlighted to the jhumias and allottees under Forest Right Act, without disturbing their normal livelihood, may help in conservation of the biological resources either directly or indirectly. Though local folk lore medicines are seen to be prevalent among the jhumias, through utilising these sporadic plant species, yet imparting adequate knowledge on the importance, uses, scope of these plants and also their processed products, in human livelihood; through various extension programmes / demonstrations will help in exchanging and sharing knowledge among the jhumias. This in turn will directly or indirectly help in conservation of plants. The newly allotted land to the tribals (mostly) under Forest Right Act require detailed soil survey for land capability classification. The Soil Survey Report alongwith vegetational resources can also be dovetailed with Mahatma Gandhi Rural Employment Guarantee may be converged for sustainable land use planning and development. It is also hoped that, this article will help scientists / functionaries / researchers /extension directorates to formulate strategic campaigns, suitable demonstrations, participatory planning, documentation and evaluation for arresting shifting cultivation effectively.

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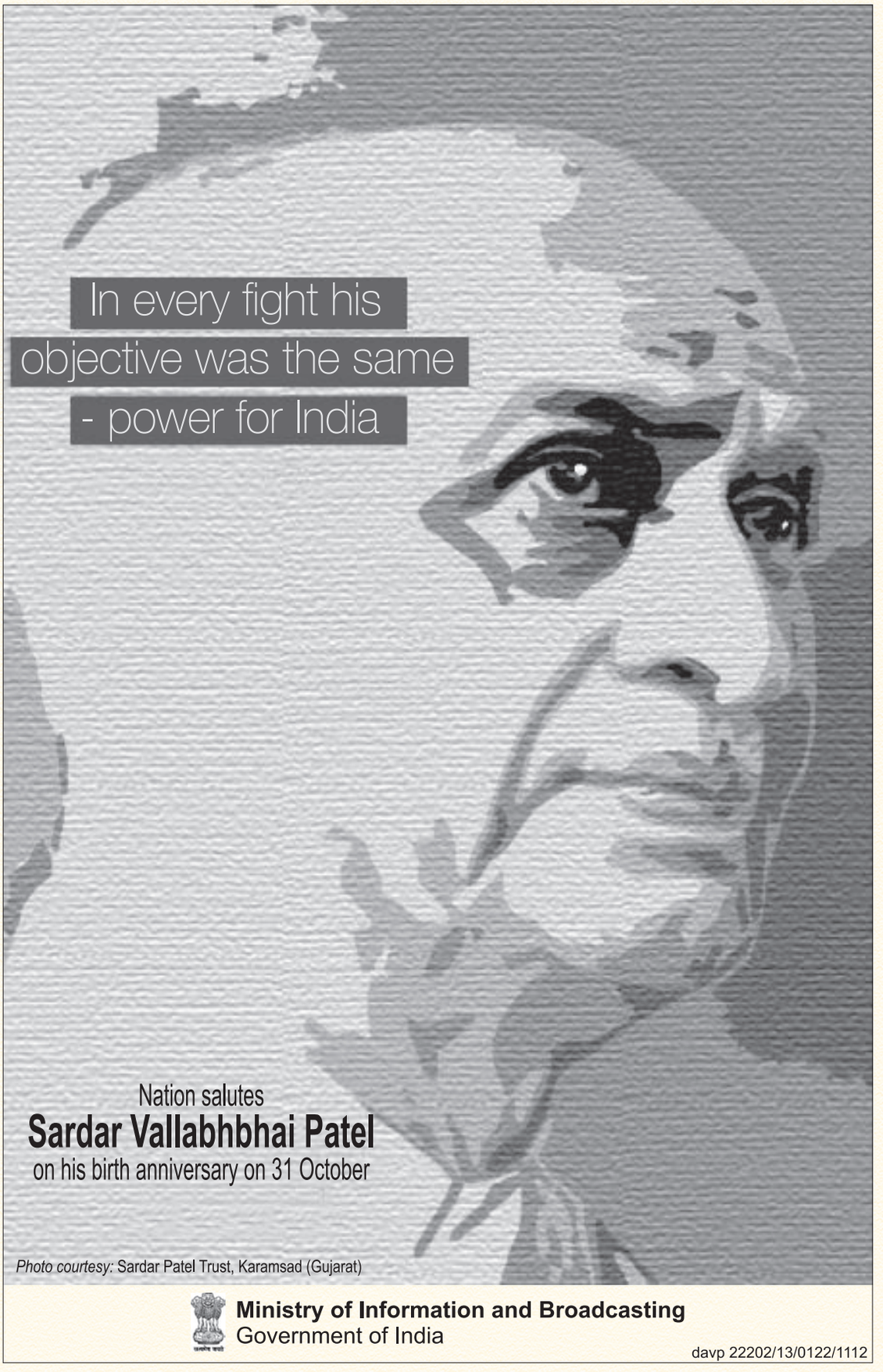
In every fight his
objective was the same
- power for India
Nation salutes
Sardar Vallabhbhai Patel
on his birth anniversary on 31 October
Photo courtesy: Sardar Patel Trust, Karamsad (Gujarat)
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TOWARDS MILLENNIUM DEVELOPMENT GOALS AND THE ROLE OF MGNREGA

Dr.S.M. Jawed Akhtar, N.P. Abdul Azeez, Md. Masroor

NREGA, with its Rights Based framework, is a paradigm shift from all other development programmes that were traditionally supply led. Centrally funded entirely through domestic resources, the implementation of this law is supported by a budget based on demand for employment.

Lack of satisfaction at the pace of human development in the 1980s inspired the United Nations to convene a series of global conferences in the 1990s to identify the problems involved and to commit the world community to addressing those problems. These World Summits set a series of goals, the Millennium Development Goals (MDGs), which has become the anchor around which international agencies have since tried to organize their developmental activities. The ongoing discussion on the modus operandi and the feasibility of achieving these targets has focused largely on the lack of resources. While resources are no doubt important, it is equally important to adopt the right kind of policies and institutions. This paper argues that a well-designed employment policy will go a long way towards promoting some human development outcomes linked to the MDGs.

India is on course to move forward to achieve the targets of millennium development goals which has accelerated its pace of poverty alleviation strategies by mobilizing greater budget resources, creating time frames for quantifiable deliverables, linking, with global frameworks of action. Major strides have been made under the National Rural Employment Guarantee Act (NREGA), is landmark legislation in

India, which was enacted after a successful struggle for employment guarantee legislation. It has a direct connection with the efforts to accelerate the achievement of the MDGs in India; efforts are on towards total eradication of poverty by 2015. NREGA, with its Rights Based framework, is a paradigm shift from all other development programmes that were traditionally supply led. Centrally funded entirely through domestic resources, the implementation of this law is supported by a budget based on demand for employment. Apart from providing livelihood to millions of households, over the last five years, the Act has become a significant vehicle for strengthening grassroot level democratic processes and regeneration of India's depleting natural resource base.

As part of poverty reduction efforts, India's Ministry of Rural Development emphasised that NREGA supports the achievement of three MDGs: Goal 1 – eradicate extreme poverty and hunger; Goal 3 – promote gender equality and empower women; and Goal 7 – ensure environmental sustainability. The United Nations Global Assessment Report (GAR), praised MGNREGA as an endorsed employment programmes and cash transfer to marginalized section of the society as important strategies that have the potential to reduce disaster risk and achieve the Millennium Development Goals and other nations to emulate the programme that has helped empower millions of marginalized.

1. Eradication of Hunger and Poverty through Employment Generation:

The first Millennium Development Goal (MDG) of 'Eradicating Extreme Poverty and Hunger' aims at reducing the proportion of people whose income is less than $1 between 1990 and 2015 by half. These include, reducing the headcount ratio of consumption poverty by 10 percentage points, raise real wage rate of unskilled workers by 20 percent and creating 70 million new work opportunities. According to the National Sample Survey Organization, 300 million Indians live in extreme poverty. The estimates of Tendulkar Committee (2009) show that, between 1993-94 and 2003-04 aggregate poverty head count ratio of India has fallen only marginally from 45.3 percent to 37.2 percent. Similarly the rural poverty has declined from 50.1 percent to 41.8 percent only and urban poverty has declined from 31.8 percent to 25.7. These numbers convey that, out of every hundred rural people around 42 people are still unable to get a descent livelihood.

There has been a "significant dent" in poverty in rural areas by increasing employment opportunities and proper wage disbursement through implementation of MGNREGA which has increased earning of rural households resulting in an increase in their purchasing power. During the first year of implementation (2006-07) in 200 districts, 2.10 crore households were employed and 90.5 crore person days were generated. In 2007-08, 3.39 crore households were provided employment and 143.59 crore person days were generated in 330 districts. In 2008-09, 4.51 crore households have been provided employment and 216.32 crore person days have been generated across the country. In 2009-2010, 5.29 crore and in 2010-2011 come down to 5.49 crore households have been provided employment. The following Table shows the state-wise employment provided from 2006-07 to 2010-2011.

Table 1: Employment Scenario in India under MGNREGS

Year	Employment Demanded HH	Employment Provided HH
2006-07	21188894	21016099(99.19 percent)
2007-08	34326563	33909132 (98.79 percent)
2008-09	45518907	45115358(99.99 percent)
2009-10	52920154	52585999 (99.37 percent)
2010-11	55756087	54947068 (98.54 percent)

Source: www.nregs.nic,com.in HH: Household

2. Gender Equality and Empowerment of Women:

The Employment Guarantee Act can also help to empower women, by giving them independent income-earning opportunities. MGNREGA provides that 30 percent of the employment provided, should be given to women. Implementation of MGNREGA has contributed to very high levels of women empowerment, particularly in the following aspects that as the work is organized by women's groups, the gender perspective gets built in automatically, for the first time equal wages are really paid and this has boosted the earnings of women. As the bank deposits are increasing, the intra-household status of the woman has also been improving commensurat ely as she controls substantial cash resources and withdrawal can be only on her decision. Women's empowerment was not among the original intentions of the MGNREGA, and is not among its main objectives. However, provisions like priority for women in the ratio of one-third of total workers (Schedule II (6)); equal wages for men and women (Schedule II (34)); and crèches for the children of women workers (Schedule II (28)) were made in the Act, with the view of ensuring that rural women benefit from the scheme in a certain manner. Provisions like work within a radius of five kilometers from the house, absence of supervisor and contractor, and flexibility in terms of choosing period and months of employment were not made exclusively for women, but have, nevertheless, been conducive for rural women. Nevertheless, women have availed of the paid employment opportunity under MGNREGS in large numbers. Interestingly, this occurred largely spontaneously. Women's participation under MGNREGS, measured in person-days, also exceeded their participation in erstwhile employment generation programmes like the Sampoorna Gramin Rojgar Yojana (SGRY) and the Maharashtra Employment Guarantee Scheme (MEGS). There are wide variations across states, within states and across districts in the share of work days for women. At the national level the participation of women has increased significantly from 40.65 percent in 2006-07 to 47.72 percent in 2010-11 which can perceived from following Table.

Table 2: Participation of Women under MGNREGS

Year	Total	Woman	Percentage
2006-07	9050.54	3679.01	40.65
2007-08	14367.95	6109.1	42.63
2008-09	21632.86	10357.32	47.87
2009-10	28359.57	13640.51	48.16
2010-11	25715.23	12274.21	47.72

Source: www.nregs.nic,com.in

The state level like Kerala (90.39) followed by Tamilnadu(82.59),Pondicherry(82),Rajasthan(68.34) is show high percentage of women participation with lowest participation of states like Assam (26.4), Bihar (28.5), Arunachal Pradesh (33), Punjab (33), West Bengal (33), Mizoram (33) during financial year 2010-11. Participation of women has increased significantly. In several states participation of women has surpassed men's participation. In states of Kerala, the social organization like Kudumbashree is playing a critical role in the women participation which account for more than 90 percent of women and it became a "Women Program". In areas where rural women are traditionally homebound, such as Uttar Pradesh, the Employment Guarantee Act has an even more significant role to play as a means of empowering rural women and curbing gender discrimination. Thus, it shows that the underprivileged majority is not completely marginalised in this elitist political system. With adequate political organisation, their demands can prevail over privileged interests.

3. MGNREGS: A Tool for Ecological Regeneration:

An ecological act is one of the best features of the MGNREGA as it designates a balance between human action and natural resources creating a sustainable economic security through green jobs and ensures the Millennium Development Goal of environmental sustainability. The MGNREGS

must be strengthened and revamped to provide not just wages for work done but work that will make ecological regeneration possible. MGNREGA has also been able to contribute to ecological restoration through its design. The activities under the MGNREGS are largely linked to water, soil and land, which are the key natural resources determining agricultural and livestock production. They can have a positive or negative influence on these natural resources, affecting their ability to provide environmental services. Environmental services include recharging groundwater, increasing rain water percolation, conserving water, increasing the area irrigated, reducing soil erosion, increasing soil fertility, conserving biodiversity, reclaiming degraded crop and grazing lands, enhancing the supply of leaf manure, fuel wood and non-wood forest produce, and carbon sequestration. The goal of MGNREGA activities has to be conserving natural resources and enhancing environmental services to sustain food and livestock production, increasing the supply of fresh water for drinking, and increasing grass and forest product production. The benefits accruing from the activities implemented under the MGNREGA can be described as "services provided". The Millennium Ecosystem Assessment (MEA 2005) considers humans an integral component of the natural ecosystem unlike classical approaches, which differentiate humans as non-natural. The approach also addresses the sustainability of resources and livelihoods by considering human wellbeing a parallel theme to the functioning of the natural ecosystem. Out of nine preferred areas of works under the MGNREGA, seven focuses on water and soil conservation. The attention of the scheme is on the following works in their order of priority:

- Water conservation and water harvesting
- Drought proofing (including afforestation and tree plantation)
- Irrigation canals (including micro and minor irrigation works)
- Provision of irrigation facility to land owned by households belonging to Scheduled Castes and Scheduled Tribes or to land of beneficiaries of land reforms or that of the beneficiaries under the Indira Awas Yojana of the Government of India.
- Renovation of traditional water bodies (including desilting of tanks)
- Land development
- Flood control and protection works (including drainage in water-logged areas)
- Rural connectivity to provide all-weather access
- Any other work, which may be notified by the central government in consultation with the state government.

MGNREGA has also been able to contribute to ecological restoration through its design. The activities under the MGNREGS are largely linked to water, soil and land, which are the key natural resources determining agricultural and livestock production

The priorities of the work to be undertaken include watershed management and water conservation, drought-proofing, flood protection, land development, minor irrigation and rural connectivity. Such work is important to strengthen the ecological foundations of sustainable agriculture. The MGNREGA is probably the world's largest ecological security programme. With the key proviso that investments in an employment guarantee programme must be in productive, eco-friendly assets. This would ensure that the resultant growth dynamic is both sustainable (by regenerating the environment) and non-inflationary (by easing the agrarian constraint). Not only does demand need stimulation, growth has to be sustainable in both economic and ecological terms, especially in these times of climate change.

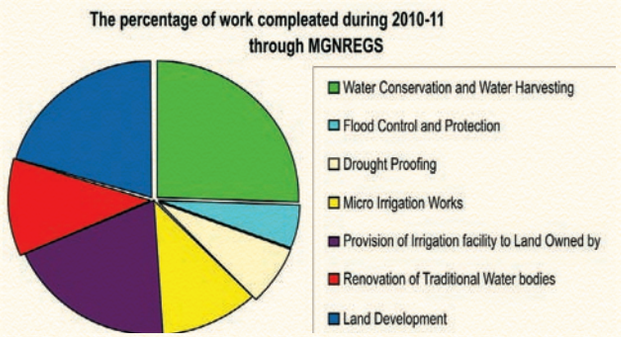
Table 3: The Number of Work Completed during 2010-11 through MGNREGS

Focus on Work	2010-11
Water Conservation and Water Harvesting	537848
Flood Control and Protection	111054
Drought Proofing	142963
Micro Irrigation Works	232384
Provision of Irrigation facility to Land Owned by	408582
Renovation of Traditional Water bodies	236166
Land Development	425494

Source: www.nregs.nic,com.in

From the above Table it becomes clear that the maximum number of work completed under MGNREGS is the water conservation and water harvesting (537848), followed by land development (425494), provision of irrigation facilities (408582). Thus, MGNREGS ensures environmental sustainability and natural ecosystem.

Figure 1



Source: Table 3

The Union Ministry of Rural Development has taken steps to achieve convergence of brain and brawn, by enlisting the support of Ministries and Departments. Such convergence of expertise for sustainable development will help to enhance farm productivity without causing ecological harm. There is also a need to raise the self-esteem of MGNREGA workers, making them feel proud of the fact that they are engaged in checking eco-destruction. Due recognition could be given to the MGNREGA groups that have done outstanding work in water harvesting, watershed development and soil healthcare with "Environment Saviour Awards". This will help spread awareness of the critical role MGNREGA workers play.

4. Conclusion:

MGNEGS is India's policy and programme commitment to achieve Millennium Development Goals and efforts are on towards total eradication of poverty by 2015. UNDP's network links and coordinates global and national efforts to reach these Goals. The year 2009, marked crossing of half way point of MDGs, Yet crucial development policies and finance are not systematically aligned with MDGs. As part of its poverty reduction mandates UNDP is working to bridge this gap. UNDP is supporting a unique low cost ATM pilot initiative for NREGA implementation. In addition, the Ministry of Rural Development and UNDP are in the process of piloting an IT initiative to link 200 District Collectors virtually under the UN Country Team Solution Exchange Model. UNDP is in the process of commissioning up to 20 additional TV spots that document best practice implementation on MGNREGA from across the states and five major research institutions were established to undertake a review of MGNREGA implementation and compliance.

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AMLA: ANTI-AGING MANTRA

Rita Singh Majumdar

Maharajas had exclusive rights over these herbs for over 5000 years because of its undeniable ability to grow more hair and retain youthful vibrant. Amla fruit contains 20 times the amount of Vitamin C found in oranges. This anti aging vitamin has been studied and confirmed as being an extremely effective addition to skin care routines as it is necessary for the synthesis of inter-cellular cement "collagen".

India is characterized by a wide range of climatic, geographical and geological conditions within which infinite varieties of many rare, precious herbs and trees flourish. The medicinal, culinary, cosmetics, aromatic and sacred application of these plants was well known to Ayurvede practioners and they remain beneficial to us today. Alma , Indian gooseberry is one of such potent gifts of nature to humankind. It contributes toward health and longevity. It is an indispensable part of the Ayurvedic and Unani system of medicine. It is known for its edible fruit. Common names of this tree include *amalaka* in Sanskrit, *amla* in Hindi, *amlaki* in Bengali.

Amla (Amalaki), scientific name *Emblica officinalis* belongs to the family Euphorbiaceae. It is referred to in ancient text as the best medicine to prevent aging.

Origin of the Herb:

Amla, a moderate sized deciduous tree, native to South East Asia is now distributed throughout India.

Due to its nourishing fruits, Amla plant was worshipped as Mother Earth. This herb used to grow in the Brahimi plateau some 14,000 feet above sea level. It also takes 5 years to mature, which explains

why we value this hair growth herb more than gold. Maharajas had exclusive rights over these herbs for over 5000 years because of its undeniable ability to grow more hair and retain youthful vibrant.

All parts of the plant are used in various Ayurvedic herbal preparations, including the fruits, seeds, leaves, root, bark and flowers. The traditional healers of Chhattisgarh have rich traditional medicinal knowledge about uses of all parts of Amla herb in treatment of different diseases.

Skin Rejuvenator:

One of the most popular vitamin prominent in most skin care products is Ascorbic Acid (Vitamin C). In this regard, Amla fruit contains 20 times the amount of Vitamin C found in oranges. This anti aging vitamin has been studied and confirmed as being an extremely effective addition to skin care routines as it is necessary for the synthesis of inter-cellular cement "collagen". Collagen is produced by the skin naturally and no creams or lotions can replace collagen. External application of collagen has absolutely no effect on the skin. Our skin doesn't have the ability to absorb collagen; it can only produce the same naturally. Collagen is responsible for maintaining the skin's elasticity; it keeps the skin supple and prevents cell degeneration which is the cause of ageing. When antioxidant Vitamin C is added to your skin, it helps your skin get rid of free radicals. Since free radicals can greatly damage your skin, the use of Vitamin C is vital to your skin health. Vitamin C also helps to break up dead skin cells to reveal a smooth, bright complexion.

Researchers now report that people who eat plenty of vitamin C-rich foods have fewer wrinkles than people whose diet contained little of it. Relative to this, they also observed that if Amla is taken regularly as dietary supplement, it counteracts the toxic effect of prolonged exposure to environmental heavy metals like lead, aluminum and nickel which cause environmental damages globally especially as researchers cautioned that when amla is dried in the shade then much of the vitamin C is retained. To get the maximum out of amla it should be taken raw with very little salt.

According to ancient Indian Ayurvedic principles, Amla has the ability to rejuvenate not only the skin but also the heart, body and bones as well as the whole system. It is low in sugar and high in fiber which is yet another benefit of amla. It also aids metabolism, if one is to consider a holistic well being, then amla is a must have everyday.

Good Vision and Attractive Looking

The amla fruit contains 720 mg of vitamin C per 100 g of fresh fruit pulp, or up to 900 mg per 100 g of pressed juice which is required for good vision and mental development. Amla leaves are useful in ophthalmic and incipient blindness. People use the fresh leaf juice of Amla for wound dressing. According to them, this application increases the rate of healing. According to the traditional healers of Chhattisgarh, adding other herbs like Kukronda (*Blumea lacera*), Chirchita (*Achyranthes aspera*), Doob (*Cynodon dactylon*), Neem, etc. in this juice to make increases its activity spectrum.

Amla fruit reduces the burning sensation in the body and helps in providing essential mineral of the body. Inside the body, vitamins and minerals play many important roles. But whereas the body can continue to function without getting the recommended daily allotments of some vitamins, a mineral deficiency can lead to death. As important as they are, most people today don't really know that much about everyday minerals and how they impact the body. The curative and health giving properties of minerals and essential oils is strongly believed by everybody. Minerals are the "bricks and mortar" of our bodies - we heal and beautify them.

Amla contains Gallic acid, tannic acid, albumin, cellulose and other minerals. Due to its tannins, even dried form retains most of the vitamin content. The fruit is nontoxic that normalizes body function, balances the neuro-endocrine system and improves immunity. It is light

and dry. In Ayurvede the fruit alone is considered a *rasayana* for *pitta* that promotes longevity and is especially good for the heart. It strengthens the lungs, helping to fight chronic lung problems as well as upper respiratory infections. For your information, the healers use the fruits alone or in combination with other herbs, in treatment of over 150 common diseases, both internally and externally especially in Chhattisgarh.

Medicinal properties

Amla seeds are acrid, and useful in treatment of asthma, bronchitis, leucorrhoea etc. Many healers use the Amla seeds in treatment of diabetes. The seeds are also used in treatment of Epistaxis. The seed powder mixed with *Shahad* (Honey) is considered as good for gynecological troubles especially in case of leucorrhoea (Safed Pani). In case of vomiting, the traditional healers recommend it with common herb Lal Chandan (*Pterocarpus santalinus*).

People also eat the fresh leaves alone or in combination with fresh curd or whey, in order to treat stomach related diseases. It is considered as good stomach tonic. It is also used in case of diarrhea. The traditional healers of Chhattisgarh plains use the leaves in different ways. For treatment of Epistaxis, they apply the fresh leaf juice with Kapoor (Camphor) on head.

Shiny and Glossy Hairs

Hair Tonic: It's one of the best-kept secrets of Indian beauty, and it's one of the ways women keep their hair so shiny and strong (aside from fabulous genetics, of course). Indian gooseberry is an accepted hair tonic in traditional recipes for enriching hair growth and pigmentation. The fruit, cut into pieces is dried preferably in the shade. These pieces are boiled in coconut oil till the solid matter becomes charred. This darkish oil is excellent in preventing graying .The water in which dried amla pieces are soaked overnight is also nourishing to hair and can be used for the last rinse while washing the hair.

The fruit of this plant is believed to enhance hair growth by stimulating the scalp, so it's often recommended for women suffering from thinning hair. It's also said to enhance wave and curl. For use as a scalp massage oil or deep conditioner, mix powdered amla with coconut or sesame oil. To add volume, mix the powder with enough water to make a paste to the consistency of yogurt and let it sit for about 15 minutes to allow the powder to dissolve. Apply it to your hair; let it soak in for a few minutes and then rinse.

The best way to take it with the least loss vitamin C is to eat it raw with a little salt. It is often used in the form of pickles and it is dried and powdered. The berry may also be used as a vegetable. It is boiled in a small amount of water till soft and taken with a little salt. It stops hair-loss, encourages nail and hair growth. It is used in general vitality tonics. It is also used in Trifla powder. It can be mixed with Henna, Shikakai, Tulsi and other herbs and be applied in hair in paste form. This cures hair fall, hair graying. It dyes, beautifies hair and rids numerous hair ailments.

Amla oil is one of the world's oldest natural hair conditioners. As an Indian herb, amla oil has been used in India since a very long time. As Indian Ayurveda says, it is used as hair oil basically for its cooling effect. According to traditional healers of Chhattisgarh the fresh leaf juice is good hair tonic and they also use the leaves in hair tonic like its fruit. This combination is a boon for the leprosy patients.

Amla plant with young fruits

Amla fruits

How Hair Oil Acts: It instantly penetrates the cuticle and fills it out. It moisturizes and hydrates the hair which adds volume naturally. It can also restore total shine and manageability without chemicals leaving the hair soft and renewed. It provides nourishment to hair roots, improve blood circulation in the scalp and will instantly stop premature graying and hair loss. It has a host of antibacterial and antifungal activities thus eliminating dandruff in the scalp and psoriasis as well.

Uses of Other Parts of the Amla Plant

According to Unani system of medicine, flowers are cooling and aperients. The traditional healers of Chhattisgarh use the Amla flower in different herbal combinations and in most of the combinations; it is added as main ingredient. People of Kanker region use the Amla root and bark, in treatment of scorpion bite. Amla bark is gray in color and peals in irregular patches. The juice is extracted or by mixing root and bark powder, aqueous paste is prepared and applied externally on affected part. Wood is red in color, hard in texture and small in size. On excessive heat it warps and splits quickly. Its wood generally utilized for making small agricultural implements. It also can be used as fuelwood.

Healing Options:

Respiratory disorders: Indian gooseberry is beneficial in the treatment of respiratory disorders. It is especially valuable in tuberculosis of the lungs asthma and bronchitis.

Diabetes: This herb, due to its high vitamin C content, is effective in controlling diabetes. A tablespoon of its juice mixed with a cup of bitter gourd juice, taken daily for two months will stimulates the pancreas and enable them to secrete insulin, thus reducing the blood sugar in the diabetes. Diet restrictions should be strictly observed while taking this medicine. It will also prevent eye complication in diabetes.

Heart Disorder: Indian gooseberry is considered an effective remedy for heart disease. It tones up the functions of all the organs of the body and builds up health by destroying the heterogeneous or harmful and disease causes elements. It also renews energy.

Eye disorder: The juice of Indian Gooseberry with honey is useful in preserving eyesight. It is beneficial in the treatment of conjunctivitis and glaucoma. It reduces intraocular tension in a remarkable manner. A cup of juice mixed with honey can be taken twice daily for this condition.

Rheumatism: To treat rheumatism a teaspoon of the powder of the dry fruit mixed with 2 teaspoons of jiggery can be taken twice daily for a month.

Scurvy: As an extremely rich source of vitamin C, Indian gooseberry is one of the best remedy for scurvy. Powder of the dry herb, mixed with an equal quantity of sugar, can be taken in doses of 1 teaspoon, thrice daily with milk.

Ageing: Indian gooseberry has revitalizing effects, as it contains an element which is very valuable in preventing ageing and in maintaining strength in old age. It improves body resistance and protect the body against infection. It strengthens the heart, hair and different gland in the body.

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