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To achieve the objective of agricultural production and productivity, the government has directed its policy towards giving rural credit to disadvantaged borrowers in the rural areas at a lower interest rate. The vehicles of providing rural credit are regional rural banks, cooperatives, and of late micro credit. We discuss in this issue, the existing structures of providing rural credit and their performance.

Most analysts have assessed that greater number of rural households have attained access to credit from the multiple formal credit institutions.

In the current financial year 2011-12, the Union Finance Minister, Mr. Pranab Mukherjee has promised greater flow of credit to the agriculture sector. Target of credit flow to the farmers in the current year is being raised from 3,75,000 crore Rupees to 4,75,000 crore Rupees. In addition, NABARD is being strengthened by infusing another 3000 crore Rupees in the Bank’s capital base.

However, despite multiple agencies giving credit to the rural sector, the critical gap in rural credit still exists resulting in the exploitation of the rural masses by money lenders.

The farmer needs money for short term to meet his urgent day to day capital requirements, medium term to buy goods like cattle and farm implements, and for long term to invest in land and capital-intensive goods. And the story is, the Indian farmer borrows year after year, but many a times he is not in a position to clear off the loans, either because the loans are larger or because his agricultural output is not large enough to pay off his debt. To help tide the crisis the government has announced loan waiver schemes on several occasions.

Of late Micro finance has become an important vehicle of rural credit. Despite the controversies surrounding the operation of the system in some areas, the potential of micro finance is not limited to the provision of financial services alone but it has attempted to address larger development issues relating to gender equality, right to livelihood, right to life and dignity.

We discuss the performance of Micro finance as an agency of providing rural credit as well.
Micro-finance is provision of thrift, credit and other financial services to the poor in rural, semi-urban and urban areas to help raise their income levels and improve their living standards. This programme not only proved to be very successful but also emerged as the most popular model of finance in India. Self Help Group-Bank Linkage Programme has made considerable progress since its inception in the early 1990s. As per the trend witnessed so far, commercial banks continued to be the leaders in disbursing loans to Self Help Groups (SHGs). The Micro-finance movement has been playing a crucial role in the financial inclusion efforts in the Indian context also.

Rural financial market development is a complex process. The creation of the formal credit structure for financing agriculture and other rural activities commenced in India in the early part of this century with the introduction of co-operatives.

**Types of Credit**

The financial requirements of the Indian farmers can be classified into 3 types, depending upon the period and another 3 types based...
on the purpose for which they are required. Farmers need funds for short periods of less than 15 months for the purpose of cultivation or for meeting domestic expenses. Main agencies for granting of short-term loans are the money lenders and co-operative societies. Medium-term loans are generally obtained for the purchase of cattle, small agricultural implements, repairs and construction of wells etc. The period of such loans extends from 15 months to 5 years. These loans are generally provided by money lenders, co-operative societies and commercial banks. The farmers need finances for the purpose of buying additional land, to make permanent improvements to land, to purchase agricultural machinery and to pay off old debts. These loans are for long periods of more than 5 years. Such loans are normally taken from Primary Co-operative Agricultural and Rural Development Banks.

The credit requirements of farmers can be classified on the basis of purpose into the following categories: 1. **Productive**: All credit requirements of farmers directly affecting agricultural productivity, e.g. for buying seeds, fertilizers, manure and agricultural implements, digging and repair of wells and tube wells, payment of wages, improvements of land etc. 2. **Consumption needs**: In the long interval of time between two crops farmers do not have sufficient income and need credit to meet their basic needs. 3. **Unproductive**: Indian farmers often borrow for unproductive purposes, like celebration of marriages, birth, death, litigation, religious functions, festivals etc. from money lenders and ‘mahajans’.

There are two sources of credit available to the farmers

**Institutional**: Consists of cooperatives, commercial banks, lead bank scheme, cooperative agriculture & rural development banks, regional rural banks and National Bank for Agricultural and Rural Development (NABARD).

**Cooperative credit society**: commonly known as the primary agricultural credit society, is the grassroots level arm of the short term cooperative credit structure, dealing directly with farmer-borrowers, granting short and medium term loans and also undertaking distribution and marketing functions. The major objective of the cooperative development programmes is to ensure that the benefits of cooperative activities flow increasingly to weaker sections, including scheduled castes and scheduled tribes.

**The Commercial Banks in India**: are providing indirect finance for the distribution of fertilizers and other inputs and extend credit to manufacturing or distribution firms or agencies and cooperatives engaged in the supply of pump sets and other agricultural machinery on a hire-purchase basis. They finance the operations of the Food Corporation of India, the State government and others in the procurement, storage and distribution of food-grains.

**Cooperative Agriculture & Rural Development Banks**: The main function is to grant loans on the security of agricultural properties. They provide credit for a variety of purposes such as redemption of old debts, improvement of land, purchase of
expensive agricultural equipment, construction of wells and erection of pumps.

**Lead Bank Scheme:** One of the commercial banks performs as a lead bank in a district for coordinating credit deployment in the district. The lead banks act as leaders to bring about a coordination of cooperative banks and other financial institutions in their respective districts to bring about rapid economic development. The close involvement of the bank with a particular area should result in deposit mobilization and also in the expansion of finance to agriculture and small industries.

**Regional Rural Banks (RRBs):** The main objective is to provide credit and other facilities, particularly to the small and marginal farmers, agricultural labourers and small entrepreneurs, so as to develop agriculture, trade, commerce, industry and other productive activities in the rural areas.

**N.A.B.A.R.D.:** It is an apex financial institution constituted to coordinate the activities of all the institutions involved in financing rural and agricultural activities. It took over the functions, responsibilities and assets of Agriculture Credit Department of the R.B.I., Rural Planning & Credit Cell of the R.B.I. and entire business of Agriculture, Refinance and Development Corporation. It is constituted for providing credit for promotion of agriculture and small scale industries, handicrafts and other allied economic activities in rural areas with a view to promote integrated rural development and prosperity.

**Non-institutional:** They include money lenders, traders, commission agents, relatives and landlords. There are rich farmers or landlords, who combine farming with money lending. There are also professional money lenders whose only occupation is money lending. They freely supply credit to productive and non-productive purposes and also for the short-term and long-term requirements of the farmers. Traders and commission agents supply funds to farmers for productive purposes much before the crops mature. This source of finance is particularly important in the case of cash crops, like cotton, ground-nut, tobacco, etc. Farmers often borrow from their own relatives in cash or kind in order to tide over temporary difficulties in an informal manner.

**Committees/Agencies on Organizing Rural Credit**

The All India Rural Credit Survey (AIRCS) Committee, 1954, forms the edifice for the policy towards the development of the Institutional credit structures. The committee highlighted the awful inadequacy in the supply of institutional credit to the rural sector and proposed an integrated scheme of reorganization and recommendations. Priority sector lending, lead bank scheme, services area approach, setting up of NABARD, are some of the outcomes of the repeated scrutiny of the system.

Coming to the recent committees, the Agriculture Credit Review Committee (ACRC), 1989 has examined the existing rural credit system in detail. It highlighted the yawning gap between income generated and costs incurred by rural credit institutions, necessitating external assistance. The committee recommended greater autonomy for commercial banks; the weakness of RRBs were seen as endemic to the system with non-viability built into them. Co-operatives were sought to be strengthened through thrust on deposit mobilization and reduction of political interference. The Narsimham Committee on Financial Sector Reforms, 1991, among other things, recommended a redefinition of priority sector, gradual phasing out of directed credit programmes to 10% of aggregate bank credit and deregulation of interest rates.

To rejuvenate the financially weak Primary Agricultural Credit Societies (PACS), the Central Government has given financial assistance aggregating Rs 8,661 crore to recapitalize 53,380 societies across the country through the NABARD in FY2011. PACS are ground-level institutions which deliver short-term credit to farmers and serve as outlets for distribution of agriculture inputs, food and other essential items to the villagers.
In FY2010, the Government released financial assistance aggregating Rs 7,972 crore through NABARD to 49,764 PACS. So far, 66.61 per cent of the total PACS have been covered under institutional development support.

The aggregate assets of NABARD increased by 17 per cent (or by Rs 22,855 crore) in FY2011 to Rs 1,59,147 crore as of March-end 2011 from Rs 1,36,292 crore as of March-end 2010. NABARD sanctioned rural infrastructure loans aggregating Rs 18,315 crore to State governments in 2010-11, against Rs 15,630 crore in 2009-10. However, utilization of funds by State governments under the Rural Infrastructure Development Fund was lower at Rs. 12,060 crore in 2010-11, as against Rs 12,388 crore in 2009-10.

Problems of Rural Credit

1. Organization of Rural Credit in India has not produced desired results in terms of the direction, quantum and quality of the flow of credit.

2. It is afflicted by alarmingly high over dues, bad debts, loan defaults, unviability, low profitability, overburdening of staff, declining control and deteriorating customer services.

3. The complex tiering of funds through RBI-NABARD-Commercial Banks-State Cooperative Banks (SCBs)-District Co-operative Banks (DCBs)-Primary Agricultural Credit Societies (PACS) has tended to unduly increase the cost of banking.

4. Imperfect information has contributed to inefficiencies like high transaction costs and low recycling of credit.

5. An appropriate institution as an enforcer and transmitter of incentives and motivator and inducer of saving is essential for development. The institutional design should serve to promote and facilitate functioning at the levels of both the lenders and borrowers. This factor seems to have been largely overlooked. Motivating to perform has not been given due importance.

6. Directed credit programmes and subsidized lending have badly affected the viable functioning of credit disturbing units. The entire exercise has largely come to be characterized by tiering of funds from above to borrowers, who often treat credit as a gift that need not be returned.

The Indian farmer borrows year after year, but he is not in a position to clear off the loans, either because the loans are larger or because his agricultural output is not large enough to pay off his debt. It is a well-known saying in the country, “The Indian Farmer is born in debt, lives in debt and dies in debt.” The Government of India introduced comprehensive crop insurance scheme to protect the farmers from natural calamities and ensure their credit eligibility from the next season. The Govt. introduced in 1999-2000 National Agricultural Insurance Scheme or Rashtiriya Krishi Bima Yojana, which envisages coverage of all food crops, oil seeds, horticultural and commercial crops.

Micro-finance is a novel approach to banking with the poor. It attempts to combine lower transaction cost and high degree of repayments, essentially because of the involvement of potential beneficiaries in the credit delivery system. Another notable development in recent years is Kisan Credit Cards. The purpose of the scheme is to facilitate short term credit to farmers. The credit card holders are also provided personal accident insurance cover of Rs. 5000 for death and Rs. 25000 for disability. Self Help Groups in both urban and rural areas will have a positive effect on poverty alleviation.

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Ensuring Better Access to Credit in Rural India

Anupam Hazra

Despite a large banking network across the country, the critical gap in rural credit still exists resulting into exploitation of the rural masses in the credit market - which is one of the most pervasive and persistent features of rural life in India.

We are now in an era when the perception of the poor as a non-profitable sector has shifted to the spectacles of their potentials. Rural finance has been recognized as a crucial element and catalyst to rural development. Millions of dollars have poured into rural finance, especially agricultural credit in the past and yet rural communities have little to show for it. Donors, governments and bankers became disillusioned with the results. Today there is renewed interest to learn from the past and experiment for the future to meet the seemingly elusive goal of increasing rural farm and non-farm investment and assets through the ready access of appropriate and sustainable financial as well as credit services to all rural households. Despite major structural changes in credit institutions and forms of rural credit - rural India is still burdened with indebtedness. The socio-economic conditions of a majority of the rural population continue to be the cause of concern for policy makers in this era of financial reforms. There are still around 200 million people in rural areas who live below the poverty line and for whom banking access is still not a reality. Despite a large banking network across the country, the critical gap in rural credit still exists resulting into exploitation of the rural masses in the credit market - which is one of the most pervasive and persistent features of rural life in India. Rural credit plays such
a crucial role in agriculture and rural economy that any disturbance in its delivery mechanism can cause cascading effects as rural development is largely dependent on the availability of financial services and facilities. Therefore, the requirement for strong and flexible structure of rural financial institutions in rural and semi-urban segment need not be overemphasised.

**Multi-Agency Approach**

India has adopted multi-agency approach for making rural credit available to the rural poor. Public policy in the country has always been directed towards ensuring adequate and cheaper credit and adopts institutionalisation of credit as the primary focus. The development of rural credit system in India has gone through three distinct phases. The first phase [from 1904 -1969] may be characterised by the monopoly of the cooperative credit institutions as rural cooperatives were emerged as the first institutional arrangement to provide loans as well as credits facilities to the farmers.

Though Cooperative Act came in 1904 but till 1950s the progress in terms of outreach by cooperatives was limited. This led to the Nationalisation of Commercial Banks during the second phase [from 1969-1991] – which has witnessed an expansion of networks of credit institutions in order to improve the access of rural population to institutional credits and other banking facilities even in the remotest parts of the country. Nationalisation of Commercial Banks was taken place in 1969 and again in 1980 - to step up credit supply to the rural people followed by operationalization of Regional Rural Banks during mid-Seventies. The third phase [from 1991 onwards] is characterised by introduction of financial sector reforms – an attempt to transform the credit institutions into organisationally strong, financially viable and operationally efficient units. Thus, development of the rural credit delivery system in the country has metamorphosed from monopoly of co-operatives to the induction of commercial banks and establishment of regional rural banks for improving the outreach and ensuring access to credit for the poorest of the poor. The Indian credit architecture basically consists of cooperatives, commercial banks and regional rural banks. Beside the rural banks and cooperatives that have a strong physical presence in the rural areas, nongovernmental organizations (NGOs), lending investors, private money lenders, traders and other Government line agencies are also playing a crucial role in ensuring different forms of credit facilities to the rural population. Though significant progress has been made in institutionalization of rural credit but still today, the rural credit situation looks grim in spite of several initiatives and constitution of several committees and task forces.

Despite several policy reforms rural India continues to experience inaccessible credit for the rural poor, because the financial sector reforms without social and rural sensitivity would only aggravate the complexities of agrarian sector reforms, which are yet to take shape. There is a need to improve credit operations especially at the grassroot level - to reach down to the poorest and up to almost-poor marginal and small farmers, to provide a wider range of financial products, to support financial institutions, and for finding new ways of combining credit with technical services. Need is also there to create space and opportunity for participation of the poor themselves in the rural financing as well as rural credit programs by giving them the greatest possible control over their own livelihoods and consulting them in the design of financial and technical support services.

**Little Access**

Estimates suggest that small farmers have little access the credit and long-term credit is highly concentrated among large farmers. Subsidised credit is often tied to particular investment, thus encouraging more capital-intensive and at the same time less labour-absorbing technologies. Credit arrangements are typically linked to specific crops and require borrowers to obtain their input supplies through the inefficient public delivery system. In fact, microfinance institutions still hesitate to lend to agriculture and fishery projects. Innovative approaches and practices have to be developed so
The Challenge of Ensuring Credit to the Poorest: Issues in Need to be addressed

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<td>Encouraging greater role of private microfinance institutions in the provision of financial services</td>
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<td>Ensuring credit and financial services for small and marginal farmers</td>
<td>Relaxing credit guidelines/schemes and restrictions</td>
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<td>Long-term credit is highly concentrated among large farmers</td>
<td>There should be a clear, contextualized credit delivery model, taking into consideration the geographic nature of the country and the existing low population density</td>
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<td>Provisioning technical services to build the capacity of the poor and provide them with appropriate technology and market access</td>
<td>Adopting regulatory changes to facilitate greater autonomy for Regional Financial Institutions</td>
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<td>Ensuring participation of the poor in micro-financing programs, which are exclusively designed for their financial security</td>
<td>Provision of an enabling policy environment that will facilitate the increased participation of the NGOs and private sector in microfinance</td>
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<td>Rural areas are characterized by low density of population and high dispersion, which is coupled with a relatively low market potential</td>
<td>Improving legal and other arrangements for loan recovery</td>
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<td>Non-participation of Government line agencies in the direct implementation of credit guarantee programs</td>
<td>Involving the poor (micro-finance clients) as stakeholders helps to ensure that programmes meet their needs, builds trust and responsibility, and may make the provision of services more efficient</td>
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<td>Lack of committed staff at the grassroots level as a result most of the rural credit program suffer from regular monitoring and low recovery of credit</td>
<td>Ensuring demand driven credit and, where possible, support services as well, is inherently participatory as it involves giving the poor maximum choice and control over their own livelihoods. Participation may also be involvement of the poor in project design – market research for micro-finance.</td>
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<td>Lack of innovation in formulation as well as in implementation of programs facilitating rural credit</td>
<td>Appropriate legal, institutional and policy foundations to promote market-based finance</td>
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<td>Credit arrangements are typically linked to specific crops and require borrowers to obtain their input supplies through the inefficient public delivery system</td>
<td>Promoting competitive, integrated and efficient banking system in rural India</td>
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<td>A viable, pro-poor and effective microfinance system that enables the poor to enhance income and reduce poverty</td>
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<td>Comprehensive review of the current rural credit structure and suggest innovative measures with a definite roadmap to meet the emerging needs/challenges in rural credit</td>
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that microfinance institutions can be encouraged to lend to the rural poor in general and to the small farmers and fishermen, in particular. For most microfinance institutions, lending to the agriculture and fishery sector is deemed a risky and therefore, costly lending activity. Making microfinance work in agriculture is the biggest challenge that needs to be addressed. The commitment to serve the poor of rural areas in a viable, replicable and sustainable manner brings tensions, pressures and challenges to the players involved. The tensions and pressures to produce profit at the end of the day coupled with the social dimension of bringing down poverty and creating more incomes and resources for the poor will always be in the mind of the providers of credit and other financial resources. Regulators and policymakers have a common objective, i.e., protect the soundness of the system and to craft policies and regulations that will not exclude people, especially the poor, but would rather move towards financial inclusion for all.

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Credit is one of the important inputs for rural development. Rural credit helps in reducing poverty by providing the poor with credit facility to start a small business. It not only supports the economic condition of the poor people but also has positive impacts on their social life through better standard of living with greater access to education and health facilities and empowerment to participate in decisions of the society.

We have multi agency rural credit delivery structure such as commercial banks, regional rural banks, cooperative banks and District Rural Development Agency (DRDA). There are more than 153,000 retail credit outlets (one for every 4100 population) to deliver credit for poverty alleviation.

**Schemes under rural credit**

**Swarnajayanti Gram Swarojgar Yojana (SGSY)**

SGSY was designed on the basis of learning of several anti-poverty programs, which were implemented earlier. It is a credit and group oriented holistic antipoverty program.

For a multi-pronged and concerted attack on the poverty, the Government of India launched an integrated program for self-employment of the
rural poor, with effect from 1 April 1999, known as Swarnajayanti Gram Swarozgar Yojana (SGSY). The scheme is an amalgamation of six earlier programs, viz. (1) Integrated Rural Development Program (IRDP), (2) Training of Rural Youth for Self-Employment (TRYSEM), (3) Supply of Improved Tools for Rural Artisans (SITRA), (4) Ganga Kalyan Yojana (GKY), (5) Million Wells Scheme (MWS) and (5) Development of Women and Children in Rural Areas (DWCRA).

SGSY is targeted to uplift the BPL families willing to take up income generating activities having potential marketing, and on available local resources matched with individual’s entrepreneurial skills. The funding pattern will be bank loan, Govt. subsidy and individual/group contribution. The income generating activities can be in the form of petty business such as vegetable selling, dairy, agriculture, small industries like garment, coir making and allied activities. This will result in sustainability of BPL families over a period of time. The beneficiary will be known as Swarozgar i.e., self-employed. The scheme under which benefit is extended is known as Swarnajayanti Gram Swarozgar Yojana. Centrally sponsored scheme, funded by Govt. of India and state Govt. in the ratio of 75:25. The objective of the SGSY is to bring Poor families above the Poverty line by providing them income generating assets through a mix of Bank credit and Govt. subsidy. Eligibility criteria is, the swarozgaries should be Individuals Below Poverty Line (BPL).

**SGSY Accomplishments**

The Government of India released Rs.11, 486 Cr under the program; bank credit mobilization is Rs.19,017. The program assisted in formation of 35.7 lakh SHGs; assisted 1.24 Cr Swarozgaris in establishing their own micro-enterprises. Total subsidy provided is Rs.9,318 Cr. The program helped many participants in improving their economic conditions. It provided new market infrastructure and new marketing channels for the rural poor. The program developed many interesting development models.

**MGNREGA**

The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) aims to enhance livelihood security of households in rural areas of the country by providing at least one hundred days of manual wage employment to every household in a year.

The participation of Schedule Castes and Schedule Tribes and Women in the large proportion is one of the main achievements of this program. There are still large regional variations in the performance in the implementation of this scheme in various states. However, challenges are there but progress is quite encouraging.

**Credit for Agriculture**

To get the best from their land, farmers need access to affordable credit. Banks have been consistently meeting the targets set for agriculture credit flow in the past few years. For the year 2011-12, the government has raised the target of credit flow to the farmers from Rs 3,75,000 crore this year to Rs 4,75,000 crore in 2011-12. Banks have been asked to step up direct lending for agriculture and credit to small and marginal farmers. The existing interest subvention scheme of providing short term crop loans to farmers at 7 per cent interest will be continued during 2011-12. In the last budget, it was provided an additional 2 per cent interest subvention to those farmers who repay their crop loans on time. In order to provide further incentive to those farmers, it was proposed to enhance the additional subvention to 3 per cent in the present budget 2011-12. Thus, the effective rate of interest for such farmers will be 4 per cent per annum. In view of the enhanced target for flow of agriculture credit, it was decided to strengthen NABARD’s capital base by infusing Rs 3000 crore, in a phased manner, as Government equity. This would raise its paid-up capital to Rs 5000 crore. To enable NABARD refinance the short-term crop loans of the cooperative credit institutions and RRBs at concessional rates. The government is planning to contribute an amount of Rs 10,000 crore to NABARD’s Short-term Rural Credit Fund for 2011-12 from the shortfall in priority sector lending by Scheduled Commercial Banks.

**Institutional credit and Poverty alleviation**

Today India’s formal financial sector is vast and consists of as many as 32.885 rural and semi urban branches of commercial banks, 14303 branches of
RRBs and nearby over a lakh of rural outlets of cooperative banks are engaged in providing formal credit in rural areas. Among the various poverty alleviation programs, the Integrated Rural Development Program, popularly known as IRDP was introduced in India in 1980. The program envisaged self-employment among the poor through loans provided by the banks for the purchase of productive assets and supported with subsidies. Despite having a wide network of rural bank branches that implemented a variety of poverty alleviation programs a very large number of the poor continued to remain outside the fold of the formal banking system. The implication could be that the existing loan and deposit products were perhaps not well suited to meet the needs of the poor. Thus began a search for alternate policies, systems and procedures that would fulfill the requirements of the poor. The focus was on improving access of the poor to micro finance (MF) in a sustainable manner rather than pushing credit through subsidies. Thus two new delivery channels viz. SHG- bank linkage model and MFI- bank linkage model emerged.

**Credit cum Subsidy Scheme**

The Credit-cum-Subsidy Scheme has been conceived for rural households having an annual income upto Rs. 32,000/-. Subsidy upto Rs. 10,000/- and loan up to Rs. 40,000/- from commercial or co-op. banks is provided to eligible households for construction of houses. Out of the total outlay of Rs. 9.15 crores, 25% share of the State Government will be Rs. 2.29 crores.

**Major challenges of Rural Credit**

- Poverty alleviation by ensuring Rural Livelihoods
- Food Security especially in rural and tribal areas
- Credit Flow for the Rural Services Sector
- Microfinance Institutions and addressing areas of concern
- Strengthening of Cooperatives and Regional Rural Banks

**Suggestions**

The following suggestions were prescribed.

- Multi agency rural credit delivery structure must be protected and supported by the Government(s).
- Literacy and numeric training is needed for the poor people to benefit from the micro-finance and poverty alleviation programs.
- The adverse effect of subsidies on bank credit to be minimized if not eliminated completely.
- Credit and marketing of agricultural produce should be linked
- Self-employment programs should not be targeted at the poorest of the poor living in remote regions where economy is stagnant. For this priority group one should focus on wage employment or pension schemes.
- Diversified use of micro-credit and public-private initiatives could prove effective for the anti-poverty initiatives.

**Conclusion**

Public policy on rural credit in India has been focused on institutionalization as a means of providing cheaper credit to farmers. As a result, the share of private moneylenders had decreased substantially. Also, ailing cooperatives, backtracked RRBs and commercial banks with waning interest in rural credit have contributed to the ineffectiveness of the multiagency system, hampering the credit delivery. Several measures have been taken to revitalize the system from time to time. Commercial banks have been successfully involved in Farm Credit Package for doubling the credit and other initiatives of Government of India. The SHG-bank linkage has already been promoted on a large scale to supplement rural credit delivery in implementing various poverty alleviation programs to accomplish inclusive growth.

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The institutional structure of rural banking today consists of a set of multi agency institutions, namely, commercial banks, regional rural banks (RRBs), cooperatives and land development banks to dispense adequate credit at cheaper rates. Recently, Self-Help Groups (SHGs) have emerged to fill the gap in the formal credit system because the formal credit delivery mechanism has not only proven inadequate but has also not been fully integrated into the overall rural social and community development.

It is found from the study of NABARD conducted in Various Regions of India on the impact of credit on fertilizer consumption and crop that one per cent increase in credit supply increased fertilizer consumption by 0.30 per cent and one per cent increase in fertilizer consumption increased crop yields in the range of 0.14 per cent to 1.13 per cent.

The performance of rural credit schemes

Agriculture related credit schemes

Since independence, a multi-agency approach consisting of cooperatives, commercial banks and regional rural banks have been providing credit to the farmers. There has been a rapid growth in agriculture credit, which has helped investments in the sector adding to gross capital formation in agriculture and allied sector as a proportion to the GDP has improved from 2.6 percent in 2004-05 to
3.4 percent in 2009-10.

Table 1 gives the quantum of credit flow to agriculture during 2005-06 to 2009-10. Total ground level credit flow increased at 25 per cent annually during this period to peak at Rs 2, 29,400 crore in 2006-07. The credit flow from cooperative system grew at 13 per cent per annum, the lowest among the agencies. As a result, the share of cooperatives in the total credit flow declined from about 31 per cent to a bit below 22 per cent during the same period.

As against the target of Rs.3, 25,000 crore of credit flow to agriculture, the banking system disbursed Rs.3,66,919 crore (provisional) surpassing the target by 12.9 per cent. Within the banking system, Commercial banks, Co-operative banks and Regional Rural Banks disbursed Rs.2,74,963 crore, Rs.57,500 crore and Rs.34,456 crore, respectively sharing 74.9 per cent, 15.7 per cent and 9.4 per cent of the total credit flow during 2009-10.

According to the new policy, the 1968 policy goals had largely been achieved as more than 90% of the country’s rural population was within a kilometer of schooling facilities and more states had adopted a common education structure. The prioritization of science and mathematics had also been effective. The 1986 policy was reviewed by a committee constituted in 1990 under the chairmanship of Acharya Ramamurti. On the basis of the recommendations of this committee, certain provisions of the 1986 policy were modified in 1992.

Kisan Credit Card Scheme (KCCS)

Two innovations, viz., micro-finance and KCCS have emerged as the major policy developments in addressing the infirmities associated with the distributional aspects of credit in the recent years. Around 9.4 crore KCCs and Rs 4, 27,748 cores were issued in 2010 for this purpose.

With regard to KCCS, there is a need to upscale its outreach to cover all the eligible farmers by creating greater awareness and giving greater publicity to the scheme. Upgradation of land records

<table>
<thead>
<tr>
<th>Sector/Sub-Sector</th>
<th>2005-06</th>
<th>2006-07</th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Crop Loan (ST-Production Credit)</td>
<td>105350</td>
<td>138455</td>
<td>181393</td>
<td>210461</td>
<td>NA</td>
</tr>
<tr>
<td>II Term Loans (MT &amp; LT Investment Credit)</td>
<td>75136</td>
<td>90945</td>
<td>73265</td>
<td>91447</td>
<td>NA</td>
</tr>
<tr>
<td>i. Minor Irrigation</td>
<td>8663</td>
<td>8566</td>
<td>2840</td>
<td>3180</td>
<td>-</td>
</tr>
<tr>
<td>ii. Land Development</td>
<td>1749</td>
<td>2285</td>
<td>2553</td>
<td>2887</td>
<td>-</td>
</tr>
<tr>
<td>iii. Farm Mechanization</td>
<td>9695</td>
<td>10113</td>
<td>8303</td>
<td>8334</td>
<td>-</td>
</tr>
<tr>
<td>iv. Plantation &amp; Horticulture</td>
<td>4481</td>
<td>5266</td>
<td>5910</td>
<td>6045</td>
<td>-</td>
</tr>
<tr>
<td>v. Animal Husbandry</td>
<td>7341</td>
<td>8045</td>
<td>9034</td>
<td>10398</td>
<td>-</td>
</tr>
<tr>
<td>vi. Fisheries</td>
<td>1019</td>
<td>1424</td>
<td>1248</td>
<td>1281</td>
<td>-</td>
</tr>
<tr>
<td>vii. Hi-tech agriculture</td>
<td>9737</td>
<td>21498</td>
<td>33325</td>
<td>41694</td>
<td>-</td>
</tr>
<tr>
<td>viii. Others</td>
<td>32451</td>
<td>33748</td>
<td>10052</td>
<td>17628</td>
<td>-</td>
</tr>
<tr>
<td>Total (I + II)</td>
<td>180486</td>
<td>229400</td>
<td>254658</td>
<td>301908</td>
<td>366919</td>
</tr>
</tbody>
</table>

Source: NABARD, 2009-10.
and sensitization of bank staff through training programmes will further add to the spread of the scheme. The exercise of preparing special agricultural credit plans with higher component of direct finance with a special thrust on small and marginal farmers should also receive high priority.

The success of KCC scheme depends on less stipulated norms. High value agriculture needs higher working capital and also entails higher risks. Facilitating credit through processors, input dealers, NGOs that are vertically integrated with the farmers, including contract farming, for providing them critical inputs or processing their produce, could increase the credit flow to agriculture significantly.

Sericulture

A special package of credit announced as a separate wing to Sericulture which has about 400 years of history and the industry flourished as an agro-industry. Over the last six decades relentless efforts of thousands of dedicated persons in the fields of research and extension have helped in this context. Over six million families spread over in some 59,000 villages across the country. Involvement of women in different activities of sericulture is about 53 percent and their contribution in the on-farm activities.

Some other agricultural credit schemes like service area approach-new strategy for rural lending service, rural infrastructure development fund, national agricultural insurance scheme etc have been implemented. Major role in this regard had play by NABARD. Unfortunately these were benefited to the medium and large operational holdings only.

Poultry development

Poultry development is one of the most resilient sectors in the rural economy, fast adapting itself to the changing biosecurity, health, and food safety needs. The poultry meat production was estimated to be 1.85 million tonnes in 2008-09.

Fish production increased from 7.14 million tonnes in 2007-08 to 7.85 million tonnes in 2009-10. Fishing, aquaculture, and allied activities are reported to have provided livelihood to over 14 million persons in 2008-09.

Impact of Credit on Crop Yields

It is found from the study of NABARD conducted in Various Regions of India’ on the impact of credit on fertilizer consumption and crop that one per cent increase in credit supply increased fertilizer consumption by 0.30 per cent and one per cent increase in fertilizer consumption increased crop yields in the range of 0.14 per cent to 1.13 per cent. Main crops considered for the analysis were paddy, wheat, maize, bajra, Masur, Bengal gram, rapeseed and mustard, jute, cotton, sunflower, onion and potato. When market density, number of villages electrified, literacy rate and credit supply were regressed on crop yields, it was found that the role of credit in influencing crop yield was quite positive and significant. The elasticity coefficients of credit were 0.28 for paddy and 0.55 for wheat.

However, the growth of direct finance to agriculture and allied activities witnessed a decline in the 1990s (12 per cent) as compared to the 1980s (14 per cent) and 1970s (around 16 per cent). Furthermore, a comparative analysis of direct credit to agriculture and allied activities during 1980s and since 1990s reveals the fact that the average share of long-term credit in the total direct finance has not only been much lower but has also decelerated (from over 38 per cent to around 36 per cent), which could have dampening effect on the agricultural investment for future growth process.

Further, an assessment of agriculture credit situation brings out the fact that the credit delivery
to the agriculture sector continues to be inadequate than demand side. The present pattern schemes were failed to provide assistance.

Success story of Micro Credit scheme

Microfinance sector has traversed a long journey from micro savings to micro credit and then to micro enterprises and now entered the field of micro insurance, micro remittance and micro pension. This gradual and evolutionary growth process has given a great opportunity to the rural poor in India to attain reasonable economic, social and cultural empowerment, leading to better living standard and quality of life for participating households.

A massive expansion is underway in micro credit in India. The cumulative progress indicates that 16 lakh SHGs, with an estimated membership of 197 million poor people, have saving accounts in the banks, with aggregate bank balance of Rs. 62 billion ($1.35 billion). Over 4.85 million SHGs have loan accounts with total loan outstanding of Rs. 280 billion ($6 billion). Loan disbursement has risen from Rs 8849.26 crore to Rs 14453.50 crores during 2007-08 and 2009-10.

Surprisingly, non Performing Assets in 2010 stood at 2.94 per cent at their compared to the other schemes. Now all the commercial banks are treating SHGs as their instant source of business and expanding credit at micro level for their consumption and productive purpose.

**SGSY- Micro credit scheme:** In April 1999, the Integrated Rural Development Programme (IRDP) was restructured and combined with Training of Rural Youth for Self-Employment (TRYSEM), Supply of Improved Tools for Rural Artisans (SITRA), Ganga Kalyan Yojana, Million Wells Scheme (MWS) and Development of Women and Children in Rural Areas (DWCRA), and a single self-employment programme known as Swarnajayanti Gram Swarojgar Yojana (SGSY) was put in place.

During the last six decades efforts were made to uplift the rural poor by various credit schemes along with welfare programmes.

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Agriculture plays a dominant role in Indian economy. Majority of the population of the country depends on agriculture, either directly or indirectly for livelihood. Agricultural credit is one of the vital inputs contributing to the success of all agricultural development programmes. Therefore, financing for agriculture is an important task because credit is an input. Farmers require credit.

In India, there is a well settled institutional credit system to finance agriculture sector specially to formers. But one of the major challenges for credit institutions, in India, is to provide timely and adequate credit. Therefore, Kisan Credit Card Scheme was started by Government of India, in consultation with RBI and NABARD in 1998-99 to help farmers access timely and adequate credit.

Objectives

The present study is concerned with exploration of Kisan Credit Card Scheme and analyses the progress made by banks under this scheme. This is a comparative analysis of the scheme. The following are the objectives of this study:

Kisan credit card has emerged as innovative credit delivery mechanism to meet the production credit requirements in a timely and hassle free manner. It is a vital tool for the rural development. Right from the inception of this scheme the farmers are enjoying the inherent advantages.
(1) To know the conceptual framework of Kisan Credit Card Scheme.
(2) To analyze the progress of this scheme in a comparative manner from 1998-99 to 2007-08.

Methodology

This study is based on secondary data. It was obtained from R.B.I and NABARD publications and various journals. The study covers 10 years from 1998-99 to 2007-08. The literary part of the paper is obtained from the various websites and journals.

What is Kisan Credit Card Scheme?

Kisan Credit Card Scheme was a step towards facilitating the access to short term credit for the farmers from the financial institutions to meet their crop production requirements which includes purchase of agriculture inputs like seeds, fertilizers, pesticides etc. A credit card and a pass book or a credit card cum pass book incorporating the name, address, particulars of land holdings, borrowing limit, validity period, are issued to beneficiaries covered under this scheme. It may serve both as an identity card and facilitate recording of transactions on an on going basis. This scheme mainly helps farmers for the purchase of inputs during the cropping season. Kisan Credit Card allows farmers to have cash credit facilities without going through the credit screening processes repeatedly. These are usually offered by the banks that lend for agricultural purposes.

The farmer to be covered under this scheme is evaluated by the bank on financial basis by looking at his past record with the bank, and on personal grounds by assuming at his reputation in the village or town. Operational land holdings, may also be the bases for fixing the credit limit under the card. The main weakness of the earlier short term credit delivery was that a lot of paper work was required on account of filling separate applications in each season.

Salient features of the Kisan Credit Card (KCC) Scheme

- A Kisan Credit Card and a pass book or card-cum-pass book are provided to the eligible farmers.
- Revolving cash credit facility involving any number of drawals and repayments within the limit.
- Limit to be fixed on the basis of operational land holding, cropping pattern and scale of finance.
- Entire production credit needs for full year to be considered while fixing limit.
- Card valid for 3 years subject to annual review.
- Each drawl to be repaid within a maximum period of 12 months.
- Conversion/reschedulement of loans also permissible in case of damage to crops due to natural calamities.

Advantages of Kisan Credit Card Scheme

(i) Advantages to farmers

- Access to adequate and timely credit to farmers
- Full year’s credit requirement of the borrower taken care of.
- Minimum paper work and simplification of documentation for drawal of funds from the bank.
- Sanction of the facility for 3 years subject to annual review and satisfactory operations and provision for enhancement.
- Flexibility of drawals from a branch other than the issuing branch at the discretion of the bank.
(ii) Benefits of the Scheme to the Banks

- Reduction in workload for branch staff.
- Minimum paper work.
- Improvement in recycling of funds and better recovery of loans.
- Reduction in transaction cost to the banks.
- Better Banker-Client relationships.

Progress of Kisan Credit Card Scheme:

In 1998-99, NABARD formulated a model Kisan Credit Scheme in consultation with major banks. This model scheme was circulated by R.B.I to commercial banks and by NABARD to co-operative banks. Broadly, three groups of banks i.e. co-operative banks, regional rural banks and commercial banks issue KCC. Since 1998-99, this scheme has been showing good performance. Hon’ble Union Finance Minister in his Budget Speech for the year 2001-02 said that “The innovation of KCC is proved to be very successful”. The following figures in a comparative manner, show the progress of Kisan Credit Card issued by different agencies. Andhra Bank was the first bank to introduce this scheme in India.

Table 1: Progress of Kisan Credit Cards (1998-99 to 2007-08)

(Rs. in crore)

<table>
<thead>
<tr>
<th>Year</th>
<th>Coop. Banks</th>
<th>RRBs</th>
<th>Comm. Banks</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of cards issue</td>
<td>Amount sanctioned</td>
<td>No. of cards issued</td>
<td>Amount sanctioned</td>
</tr>
<tr>
<td>1998-1999</td>
<td>155353</td>
<td>826</td>
<td>6421</td>
<td>11</td>
</tr>
<tr>
<td>1999-2000</td>
<td>3594869</td>
<td>3606</td>
<td>173301</td>
<td>405</td>
</tr>
<tr>
<td>2000-2001</td>
<td>5614445</td>
<td>9412</td>
<td>648324</td>
<td>1400</td>
</tr>
<tr>
<td>2001-2002</td>
<td>5435859</td>
<td>15952</td>
<td>833629</td>
<td>2382</td>
</tr>
<tr>
<td>2002-2003</td>
<td>4578923</td>
<td>15841</td>
<td>963950</td>
<td>2955</td>
</tr>
<tr>
<td>2003-2004</td>
<td>4878236</td>
<td>9855</td>
<td>1274289</td>
<td>2599</td>
</tr>
<tr>
<td>2004-2005</td>
<td>3555783</td>
<td>15597</td>
<td>1729027</td>
<td>3833</td>
</tr>
<tr>
<td>2005-2006</td>
<td>2598226</td>
<td>20339</td>
<td>1249474</td>
<td>8483</td>
</tr>
<tr>
<td>2006-2007</td>
<td>2297640</td>
<td>13141</td>
<td>1405874</td>
<td>7373</td>
</tr>
<tr>
<td>2007-2008</td>
<td>2091329</td>
<td>19991</td>
<td>1772498</td>
<td>8743</td>
</tr>
<tr>
<td>Total</td>
<td>34800663</td>
<td>124560</td>
<td>10056787</td>
<td>38184</td>
</tr>
</tbody>
</table>

Source: NABARD-PCD and NAFSCOB

From Table 1, it is evident that 784165 KCC cards had been issued with the sanctioned amount of Rs. 2310 crore in the year 1998-99. Commercial banks had issued more KCCs as compared to other agency i.e. co-operative banks and RRBs. The proportion of RRBs in issuing KCCs was very little in 1998-99. Co-operative Banks were at the second position in the inception year. Total no. of cards issued by all agencies has been showing a fluctuating trend while in case of total amount sanctioned, the figures shows increasing trend. Upto the year 2007-08, 706742231 cards have been issued with the sanctioned amount of Rs.3,16,985 crore . The commercial banks have issued more than half of total no of issued cards. In term no. of cards issued, co-operative banks are at the second position. As on 31 March 2008, co-operative banks have issued maximum cards Maharashtra state while RRBs have issued maximum cards in Uttar Pradesh. Commercial Banks have issued maximum KCCs in Andhra Pradesh.
Table 2: Statistics of No. of Kisan Credit Card Issued (1998-99 to 2007-08)

<table>
<thead>
<tr>
<th>Agency</th>
<th>Average No.</th>
<th>Minimum No.</th>
<th>Maximum No.</th>
<th>Average compound growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-operative Banks.</td>
<td>34,80,066</td>
<td>1,55,353</td>
<td>56,14,445</td>
<td>29.69</td>
</tr>
<tr>
<td>RRBs.</td>
<td>10,05,679</td>
<td>6,421</td>
<td>17,72,998</td>
<td>75.43</td>
</tr>
<tr>
<td>Commercial Banks</td>
<td>31,21,678</td>
<td>6,22,391</td>
<td>48,07,964</td>
<td>22.16</td>
</tr>
</tbody>
</table>

Source: Calculated from Table 1.

Table 2 shows the average no. minimum and maximum no. of KCC issued and average compound growth rate during ten years i.e. 1998-99 to 2007-08. The figure of average no. of cards issued of co-operative banks is highest. All three type of agencies had issued minimum cards in the inception year 1998-99. The figure of maximum no. of cards is also of cooperative banks which had been issued in the year 2000-01. The highest value of ACGR of no of card issued is of regional rural banks followed by co-operative banks.

Table 3: Statistics of Amount Sanctioned under KCC Scheme (1998-99 to 2007-08) (Rs. in Crore)

<table>
<thead>
<tr>
<th>Agency</th>
<th>Average Amount</th>
<th>Minimum Amount</th>
<th>Maximum Amount</th>
<th>Average compound Growth rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-operative Banks.</td>
<td>12,456</td>
<td>826</td>
<td>20,339</td>
<td>37.53</td>
</tr>
<tr>
<td>RRBs.</td>
<td>3,818.4</td>
<td>11</td>
<td>8,743</td>
<td>95.00</td>
</tr>
<tr>
<td>Commercial Banks.</td>
<td>15,424.1</td>
<td>1,473</td>
<td>59,530</td>
<td>44.76</td>
</tr>
</tbody>
</table>

Source: Calculated from Table 1.

Table 3 depicts that in terms of average of amount sanctioned, commercial banks are at top followed by co-operative banks. The same situation is in terms of minimum and maximum amount sanctioned under the KCC scheme during the study period. But, RRBs have achieved the highest ACGR of amount sanctioned followed by commercial banks.

Conclusion:

Kisan credit card has emerged as an innovative credit delivery mechanism to meet the production credit requirements in a timely and hassle free manner. It is a vital tool for the rural development. Right from the inception of this scheme the farmers are enjoying the inherent advantages. It is observed that not only the size of land but also cost of production should be taken in to consideration while fixing the credit limit and there should be a link between Kisan Credit Card and Crop Insurance. Kisan credit should also be issued for consumption credit with production credit. But, for the success of this scheme, education of both the farmers and also the bank officials about the scheme is required. However, this scheme is a boon to farmers.

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The necessity of rural finance was felt to provide protection & reliance to rural people who rely highly on informal source of finance like moneylenders, landlords & traders etc. but they exploit farmers and small entrepreneurs by charging exorbitant rate of interest & force farmers to sell their product at low price to them. Rural people also face the risk of unpredictable production of crops due to high dependency on monsoon. Including problem of finance they also suffer from lack of seeds, fertilizers, water supply and other facilities which lead to rural indebtedness. In developing country like India, RRB’S were set up to fulfill the following objectives.

(i) Identify the financial need specially in rural areas.
(ii) To enhance banking & financing facilities in backward or unbanked areas.
(iii) To provide finance to the weaker section of society like small farmers, rural artisans, small producers, rural laborers etc.
(iv) To provide finance to co-operative societies, Primary Credit societies, Agricultural marketing societies.
(v) Enhance & improve banking facilities to semi urban, rural & other untapped market.
The first recommendation for the establishment of regional rural banks was made by Banking commission in 1972. As the result of this recommendation a working group headed by Mr. M. Narsimham Rao, RRB’s came into existence in 1975 to mobilize rural areas small saving & provide other banking facilities to the small and backward areas. RRB’s are usually sponsored by public sector banks thus they keep their deposit with these bank & are also dependent for their loan operations & finance on sponsor bank & NABARD.

The main objective of RRB’s is also to promote saving investment hands which helps to collect adequate deposits that enable them to work at low cost as compared to commercial banks.

An advisory committee headed by chairman Shri V.S. Vyas recommended for the restructuring of RRB’s in June 2004. A Working group was also set up in RBI to examine the scope for strengthening RRB’s which submitted its report showing huge variation in number of districts covered & branch network of RRB’s Thus various suggestions were given to improve operational viability & to strengthen some weak RRB’s by amalgamation & mergers. The process of amalgamation & merger of these banks started in year 2005.

It is realized by the Government that RRB’s are the most suitable medium for credit disbursement in backward areas . To make agricultural finance more effective a special package was announced by RBI under which sponsor bank were advised to provide line of credit to RRB’s and were permitted to set up off site ATMs, issue debit/credit card & handle pension related works. RBI also reviewed various norms to allow them for non trade related current a/c transaction to release foreign exchange for overseas education, medical treatment, business travel etc. RBI also allowed RRB’s to lend loans to non target groups, deregulated their deposits, lending rate & permitted investment in profitable ways.

**Problems & Challenges**

(i) RRB’s are facing the problem of inadequate finance. They are dependent on NABARD to collect finance for their further operations. Poor rural people are unable to save anything due to poverty & low per capita income. The low level of saving of these customer create obstacle for RRB’s to collect sufficient deposits.

(ii) High overdues & poor recovery of loan is one of the biggest concern affecting the functioning of RRB’s. Reasons being poor access of granting loan, insufficient & untrained staff, unproductive or less productive use of credit, inadequate production, poor marketing facilities & improper channel of recovery system.

(iii) There is also a problem of regional imbalance in banking facilities provided by RRB’s .They are creating this problem by concentrating their branches in some specific states & districts & loose other prospective group of customers.

(iv) Many RRB’s are suffering from the problem of heavy loans because of low repaying capacity of their customer, untrained staff, low level of deposits & heavy sanction of loan without checking the creditworthiness of their customers.

(v) These banks have still not played a significant role in poverty alleviation of the country. Although various efforts have been made in this regard but lack of economic infrastructure, poor marketing strategies, poor knowledge of customers, low production, low awareness about savings have created many hurdles for RRB’s.

(vi) Lack of proper co-ordination between RRB’s & other financial institution like commercial banks, NABARD & other co-operative bank has badly affected the performance of these banks.

**Suggestive Measures**

(i) It is observed that about 50% of defaulters are willful defaulters thus the strong loan recovery system and effective mechanism for the recovery of agriculture loan should be evolved rapidly. RRB must take utmost care to provide loan to increase productivity & strengthening the warehousing facility which may enable
farmers to get remunerative price of their product.

(ii) They should pay serious attention in loan disbursement to benefit all sector of rural economy. They should not confine their operations only in agriculture sector but also provides benefits to small entrepreneurs, village & cottage industries & small farmers.

(iii) They should establish proper co-ordination with other institutional financing agencies, co-operative banks, commercial banks & local participants to enhance their capability and exploit untapped rural market.

(iv) It is well known fact that large reputed rural people are mostly benefited by these bank by getting huge credit through their influence in the locality. These bank should pay serious attention to provide advantage to the weaker section of the society to fulfill their basic objective.

In order to make RRB’s more stronger & efficient, various measures have been taken by Reserve Bank of India. A working group was constituted by Reserve Bank of India under the chairmanship of Shri G. Srinivasan for technology up gradation of RRB’s which recommended RRB’s to move towards core banking solution. A committee on Recapitalization of RRB’s has also been established which has given its valuable recommendations. In view of the expanding business of the RRB’s, the committee recommended to increase the authorized capital of RRB’s to Rs. 500 crore. The Committee also suggested that an additional amount of Rs. 700 crore may be kept to meet some contingencies. RRB’s with a net worth of Rs. 100 crore or more as on March 2009 may be permitted to pay dividend from April 1, 2013 onwards. The committee carried out an assessment of capital requirement for all 82 RRB’s to enable them to have CRAR of at least 7 percent as on March 31, 2011. The recapitalization requirement would be Rs. 2200 crore for 40 RRB’S out of the 82 RRB’s. The remaining 42 RRB’s shall maintain CRAR of at least 9 percent as on March 2012. The Committee also considered change in sponsor bank whenever required for the betterment of RRB’s. Performance of RRB’s may be reviewed by sponsor bank & NABARD at quarterly basis and a fund of Rs. 100 Crore may be set up for training of RRB’s staff.

### PERFORMANCE INDICATOR OF RRB’s

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>196</td>
<td>133</td>
<td>96</td>
<td>91</td>
</tr>
<tr>
<td>Branch Network</td>
<td>14,481</td>
<td>14,488</td>
<td>14,545</td>
<td>14,790</td>
</tr>
<tr>
<td>Deposits</td>
<td>62,143</td>
<td>71,329</td>
<td>83,144</td>
<td>99,095</td>
</tr>
<tr>
<td>Loan &amp; Advances (Net)</td>
<td>31,803</td>
<td>38,520</td>
<td>47,326</td>
<td>57,601</td>
</tr>
<tr>
<td>Total Asset</td>
<td>77,867</td>
<td>89,645</td>
<td>1,05,768</td>
<td>1,23,541</td>
</tr>
<tr>
<td>Profit Making RRB (No.)</td>
<td>167</td>
<td>111</td>
<td>81</td>
<td>82</td>
</tr>
<tr>
<td>NPA/Total Assets</td>
<td>8.5</td>
<td>7.3</td>
<td>6.6</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Source: Bulletins of RBI & NABARD

It is revealed that after amalgamation & mergers, deposits and loan & advances of RRB’s has shown growing trend. RBI also permitted them to invest their surplus in profitable ways.

### Conclusion

Regional Rural Banks plays a key role as an important vehicle of credit delivery in rural areas with the objective of credit dispersal to small , marginal farmers & socio economically weaker section of population for the development of agriculture ,trade & industry .But still its commercial viability has been questioned due to its limited business flexibility, smaller size of loan & high risk in loan & advances. Rural banks need to remove lack of transparency in their operation which lead to unequal relationship between banker and customer. Banking staff should interact more with their customers to overcome this problem. Banks should open their branches in areas where customers are not able to avail banking facilities due to underdeveloped transport and communication facilities. In this competitive era, RRBs have to concentrate on speedy, qualitative and secure banking services to retain existing customers and attract potential customers.

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Swabhimaan: A Unique Financial Inclusion Initiative

Beena Yadav

The average population per bank branch is around 13,900. To address this need the Union Finance Minister in his Budget Speech 2010-11 directed all banks, to provide appropriate banking facilities to habitations having population in excess of 2,000 by March, 2012 using various models and technologies including branchless banking through Business Correspondents.

Providing banking facilities across the length and breadth of the country, particularly in rural areas, has always been a great challenge for the successive governments since Independence. Nationalisation gave a big boost to expansion of banks in rural areas with Public Sector Banks becoming important instruments for advancement of rural banking and changing lives of rural populace. However, financial inclusion remains one of the biggest challenges before our nation even today as only about 38% of bank branches are in rural areas and only 40% (approx.) of the country’s population have bank accounts. Though strides have been made in expansion of bank branches from around 8700 at the time of bank nationalization in 1969 to around 87,000 presently, only 32,000 (approx.) are in rural areas.

The average population per bank branch is around 13,900. To address this need the Union Finance Minister in his Budget Speech 2010-11 directed all banks, to provide appropriate banking facilities to habitations having population in excess of 2,000 by March, 2012 using various models and technologies including branchless banking through Business Correspondents. Accordingly, the banks through the forum of State Level Banker Committees (SLBCs), have formulated their roadmaps for Financial Inclusion and have identified approximately 73,000 habitations having a population of over 2,000 for providing banking facilities. These habitations have
been allocated to Commercial Banks, Regional Rural Banks and Cooperative Banks for providing banking facilities in a time bound manner. This would provide new bank accounts to around 5 crore rural households.

Accordingly, a nationwide programme on financial inclusion, “Swabhimaan” was launched in February, 2011 by the Government, which is focused on bringing the deprived sections of the society in banking network to ensure that the benefits of economic growth reach everyone at all levels. This campaign is a big step towards socio-economic equality by bringing the underprivileged segments of Indian population into the formal banking fold for the first time.

**Basic Banking Services**

“Swabhimaan” is a path-breaking initiative by the Government and the Indian Banks’ Association to cover economic distance between rural and urban India. This campaign promises to bring basic banking services to 73,000 unbanked villages with a population of 2,000 and above by March, 2012 and at least 5 crore new accounts will be opened. The movement will facilitate opening of banks accounts, provide need-based credit, remittance facilities and help to promote financial literacy in rural India. The programme will increase the demand for credit among the millions of small and marginal farmers and rural artisans who will benefit by having access to banking facilities.

This financial inclusion campaign named, “Swabhimaan” aims at providing branchless banking services through the use of technology. The vision for this programme is social application of modern technology. Banks will provide basic services like deposits, withdrawals and remittances using the services of Business Correspondents also known as Bank Saathi. This initiative also enables Government subsidies and social security benefits to now be directly credited to the accounts of the beneficiaries so that they could draw the money from the Business Correspondents in their village itself. The Government hopes to reach the benefits of micro insurance and micro pension products to the masses through this banking linkage. It would now be possible for the large number of migrant workers in urban areas to remit money to their relatives in distant villages quickly and safely.

The facilities provided through banking outlets will enhance social security by facilitating the availability of allied services in course of time like micro insurance, access to mutual funds, pensions, etc. Banking facilities like Savings Bank, recurring Deposits, Fixed deposits, Remittances, Overdraft facility, Kisan Credit Card (KCCs), General Credit Cards (GCC) and collection of cheques will be provided.

The Banks are also working together with the Unique Identification Authority of India (UIDAI) for enrolment, opening bank accounts and also to facilitate transfer of government subsidies and other payments.

The success of this programme will depend on the proper utilization of the Business Correspondents (BCs) or Bank Saathis, who are persons engaged by Banks to create a closer relationship between the formal financial system and the people living in the rural hinterland, far away from brick and mortar bank branches. The BCs will help in making available banking facilities to the interior areas through various handheld mobile devices and other technologies that reduce cost and have the ability to record banking transactions and to communicate the record of such transactions to the Bank using the internet facilities / GPRS.

**Monitoring**

The progress of “Swabhimaan” programme will be monitored through the State Level Bankers Committee mechanism. District Magistrates/Collectors are being sensitized in this regard to ensure proper monitoring of the programme through coordinated efforts of all stake-holders. The State Governments have been advised to route all Government benefits and social security payments through the banking system so that the benefits reach the beneficiaries timely and efficiently and leakages are reduced substantially.

“Swabhimaan” campaign is expected to benefit millions of small and marginal farmers and rural artisans by providing them easy access to credit at lower rates and save them from clutches and exploitation by moneylenders. (source PIB)

*(The author is Dy. Director (M&C) Press Information Bureau, New Delhi)*
Automated Teller Machines (ATMs) are now the heart of banking. Usages of ATMs have substantially increased in India and it is not uncommon to see huge queues of people in ATMs, especially during off business hours and holidays. ATM have brought down the work pressure substantially from cash tellers in bank branches, and many a branches may have deserted looks due to increasing usage of ATMs.

The latest on the techno-biological front is called biometrics. Biometrics is digitized retinal scans; fingerprints, and voiceprints, unique characteristics that many aren’t will provide greater identity security or pose more of a threat to losing our anonymity. Regardless, the industry is becoming so big that there is talk of developing standards for biometric hardware and software. Biometrics is also catching the attention of government.

**Biometrics**

What better way than using Biometrics, which has successfully been applied for identification purpose to validate passport and travel documents, entry into secured areas, and in authenticating or securing transactions, especially in developed nations. Biometrics can be applied to uniquely identify an individual, based on his/her physical or physiological or behavioral traits, features or attributes, which include facial recognition (visage is such an example), DNA, fingerprint, voice recognition etc.,
There is still the issue of fingerprint spoofing or cloning (fake biometrics), but it is certainly easier to clone a card number, as it is currently practiced. In different counties, biometrics technology (fingerprint authentication to be precise) has been successfully used to combat ATM fraud by financial institutions such as the Western Bank in the USA, Banco Flabella in Chile, Grupo Financiero Banotre in Mexico, to mention a few. In developing countries such as Nilgera, according to reports, ATM fraud seem to be committed by mostly individuals linked to bank officers who are able to provide pin numbers and other relevant information required to commit such crimes.

**History of ATM & Biometrics**

ATM or Cash points, first introduced in 1961 by city bank of New York on a trial basis, allowed financial institutions provide their customers with a convenient way, round the clock, to carry out varying transactions which included withdrawal of funds, made deposits, check account balance, and later on included features to allow customers pay bills etc., There was no need for a cashier to be present or for a customer to physically ATM technology allows customers carry out the above-mentioned transactions using an ATM card, which could be a debit or a credit card. An ATM machine authenticates the card by reading and verifying the magnetic strip, card number, expiration date, and an already provided or pre-selected PIN number.

The concept of using the iris for biometry was developed in 1981, before the technology to implement the idea was available. Leonard Flom, MD, and Aran Safir, MD, two ophthalmologists were discussing the possibility of using the distinct patterns of the iris for identification.

**Developments**

With the development of biometric solutions for the ATMs there is no need to remember PIN numbers. Software vendors are coming up the fingerprint solutions for the rural masses. Chennai based Financial Software and System (FSS) has recently launched its biometric ATM Interface Solution (BASIS) that enables connectivity of ATMs with biometric support to Electronic Financial Transaction (EFT) switches elaborating on the working of the biometric solutions. Customers opting for biometric authentication can visit a nearby by

**Benefits**

Since biometric technology can used in the place of PIN codes in ATMs, its benefits mostly accrues to rural and illiterate masses who find it difficult to use the keypad of ATMs. Such people can easily put their thumbs on the pad available at ATMs machines and proceed for their transactions.

- Provide strong authentication.
- Can be used instead of a PIN
- Hidden costs of ATM card management like card personalisation, delivery, management, re-issuance, PIN generation, help-desk, and re-issuance can be avoided.
- Ideal for Indian rural masses.
- It is accurate.
- Flexible account access allows clients to access their accounts at their convenience.
- Low operational cost of the ATMs will ultimately reduce TCO.

**How does it works**

With ATMs supported by biometric solutions, banks having a presence across the country are leveraging on this technology. The ATMs are networked and connected to a centralized computer (Switch), which controls the ATMs. The use of biometrics identification is possible at on ATM. The information can be stored at a bank branch. ATMs are so prevalent and you have so many people using ATM that it becomes easy to use biometrics as replacement for an ATM PIN. The typical ATM has two input devices (a card reader and keypad) and four output devices (display, screen, cash dispenser, receipt printer, and speaker). Invisible to the client in a communications mechanism that links the ATM directly to ATM host network. The ATM function s much like a PC, it comes with an operating system (usually OS/2) and application software for the user interface and communications.

**Rural India**

To reach the rural masses, banks are going all out in providing a user-friendly banking experience.
To boost micro financing initiatives, banks are deploying biometric solutions with ATMs. Establishing the identity of a rural depositor through biometrics makes it possible for illiterate or barely literate folks to become part of the banking user community. In recent years the importance of biometrics has grown tremendously with an increasing demand of security in accordance of unique identification of individuals. It uses for identification in applications other than policing is on the rise. In view of the rapidly increasing applications, the scope of biometrics is also increasing, be it identification via face, retina, or iris. Fingerprinting, however, has the advantage of being a familiar concept worldwide.

Some Indian banks have started implementing biometric applications in retail branch applications for officer authentication. Elsewhere in the world, efforts are on enabling payments through kiosks based on fingerprints (non-card based). ATM enhancements with biometric envisaged by vendors eliminate the need for PIN entry, and authenticate customer transactions by thumb impressions. A simplified menu on ATMs coupled with possible audio guidance in local language enable easy use for rural masses. So far bank ATMs are dependent on PIN verification. The fingerprint authentication method is non-PIN based, and this requires enhancements to the standard Switch environment.

**Conclusion**

Deploying ATM for rural masses depends largely on banks stepping forward to take the requisite initiatives. The recent directive from the government on financial inclusion is key driver for the growth of such solutions in India. Banks are quite aware of the untapped potential in the rural sector. The telecom industry is witnessing a blistering growth pace, and so is the Internet. The National Rural Employment Guarantee Program that guarantees employment and payment in the rural sector requires robust solutions. Using thumbprint and voice guidance in ATMs reduces literacy requirements to a considerable extent. However, the technology is not restricted to rural masses.

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Population census is the process of collecting, compiling, analyzing and disseminating demographic, social, cultural and economic data relating to all persons in the country, at a particular time in ten years interval. The Indian Census has a very long history. The earliest literature ‘Rig Veda’ reveals that some kind of population count was maintained during 800-600 BC. Kautilya’s Arthasastra, written around 321-296 BC, laid stress on Census taking as a measure of state policy for purpose of taxation. During the regime of Mughal king Akbar the Great, the administrative report ‘Ain-e- Akbari’ included comprehensive data pertaining to population, industry, wealth and many other characteristics.

The Census of India has emerged as the most credible source of information for planners, research scholars, administrators and other data users. Census has been conducted in India since 1872. However, the first synchronous census in India was held in 1881. The planning and execution of Indian Census is challenging and fascinating. India is one of the very few countries in the World, which has a proud history of holding Census after every ten years. In India, the population Census is a Union Subject (Article 246) and is listed at serial number 69 of the Seventh Schedule of the Constitution. Census of India is conducted under the provisions of the Census Act 1948 and the Census Rules, 1990. Although the Census Act is an instrument of Central Legislation, in the scheme of its execution the State Governments provide the administrative support for the actual conduct of the Census.
The Census of India 2011 was the fifteenth census in the continuous series as reckoned from 1872 and the seventh since independence. The motto of India Census 2011 is “Our Census, Our Future”. It started on 1st of April 2010. It was carried out in two phases, covering 640 districts and 5924 sub-districts. The canvassing of the questionnaire was done from 9th of February 2011 to 28th of February 2011. A Revision Round was then conducted from 1st to 5th of March 2011 and the count updated to the Reference Moment of 00:00 hours on the 1st of March 2011.

National Population Register (NPR)

This year, the Government of India has added another task to prepare a National Population Register (NPR) along with census data. The approved cost for the creation of the NPR is Rs 3539.24 crores. The NPR will include details such as the name of the person, father’s name, mother’s name, spouse’s name, sex, date of birth, place of birth, current marital status, education, nationality, occupation, present address of usual residence and permanent residential address. The NPR will provide a standard identity database and facilitate the allotment of Unique Identification (UID) Number to each individual, above the age of 15 years. A biometrics based identity database along with UID number would benefit the common man in many ways. It will obviate the need for producing multiple documentary proofs of identity by an individual for availing government or private services.

Information on castes & preparation of satellite imagery

The number of members of each caste was counted in 1931 census carried out by the British. Information on castes initially not intended was later included after demand from almost all opposition parties. The latest addition in Census 2011 is the preparation of satellite imagery based digital maps at the street and building level in 33 Capital Cities of the country. These digital maps were used effectively to carve out the Enumeration Blocks in both phases of the Census.

The massive decadal census exercise covered 6.41 lakh villages deploying 2.7 million officials. The cost of the exercise worked out to be Rs18.19 per person. The Census will cost around Rs 2209 crores.

The 2011 Census provisional figures released on 31st March 2011 reveals that India’s population rose to 1.21 billion people (world’s 17.5 per cent population) over the last 10 years -- an increase by 181 million, but significantly the population growth rate is slower for the first time in nine decades. The male population has grown by 17.19 percent to reach 623.7 million (62 crore) while the female population has risen by 18.12 percent to reach 586.5 million (58 crore). India is now home to a whopping 17.5 per cent population - compared to China which hosts 19.4 per cent. India’s population is now equal to the population of United States, Indonesia, Brazil, Pakistan, Bangladesh and Japan put together. India has 623.7 million males and 586.5 million women.

Sex Ratio

The Census indicates a continuing preference for male children over female children. A matter of overwhelming concern lies in the fact that the child sex ratio has slipped to its lowest since India’s independence. The sex ratio (the number of females per 1,000 males) for the 0-6 age group has dramatically dropped to 914 in 2011, from 927 in 2001. This means in a decade when the country enjoyed unprecedented economic growth, it also became a terrifyingly hostile place to be conceived or born as a girl. “It’s extremely alarming and everybody should be worried and careful against this malaise,” said Girija Vyas, chairperson of the National Commission for Women. She said “Convictions under the Act are very low. Female foeticide is high even in states that have high education and are affluent. The government needs to step in and act urgently.” The overall sex ratio in the country improved from 933 to 940, the highest recorded sex ratio since the 1971 census. For the first time in the last decade, females have outnumbered males in Goa which has recorded a 8.17 percent growth in overall population. Three states-J&K, Gujarat and Bihar, showed a decline in the sex ratio.

Population of children (0-6 years)

The population of children (0-6 years) in the country has recorded a decline of about five million over the previous census, according to provisional results Census 2011. While the decline in male population (0-6 years) is 2.42 percent, it is higher at 3.80 percent in females. Uttar Pradesh (29.7 million), Bihar (18.6 million), Maharashtra (12.8 million),

India’s population is now equal to the population of United States, Indonesia, Brazil, Pakistan, Bangladesh and Japan put together. India has 623.7 million males and 586.5 million women.
Madhya Pradesh (10.5 million) and Rajasthan (10.5 million) comprise 52 percent children in the 0-6 years age group. The total number of children in the country in the age group of 0-6 years is 158.8 million, about five million less than the 2001 census figures and marks a negative growth of 3.08 percent.

**Population Growth**

On the plus side, the overall population growth rate is 17.6 in 2011, significantly lower than 2001 when it was 21.15 per cent. The period covered by this census -2001 to 2011 - is the first decade, with exception of 1911-1921, where the growth rate has declined. Among the states and Union territories, Uttar Pradesh is the most populous state with 199 million people and Lakshadweep the least populated at 64,429. The combined population of UP and Maharashtra is bigger than that of U.S. During 2001-2011, India added nearly as many people as there are in Brazil. Uttar Pradesh has the largest proportion of the country’s population at 16 percent (If UP was a country, it would be the fifth most populous country in the world), followed by Maharashtra and Andhra Pradesh (nine percent each), West Bengal (eight percent) and Andhra Pradesh (seven percent). While Dadra and Nagar Haveli and Puducherry has the highest population growth rate of about 55 percent, Nagaland has the lowest.

**Density of population**

Density of population of India rose from 325 persons per square km in 2001 to 382 in 2011. The density of population is highest in Bihar 1102, followed by West Bengal 1029, Delhi 9340, Chandigarh 9252...

**Literacy**

The right to education is a fundamental right and UNESCO aims at education for all by 2015. India, along with the Arab states and sub-Saharan Africa, has a literacy level below the threshold level of 75%, but efforts are on to achieve that level. There is good news on the literacy front as the literacy rate has increased from 64.83 per cent in 2001 to 74.04 per cent in 2011 showing an increase of 9.21 per cent. Male literacy rate, at 82.14 is ahead of the female literacy rate of 65.46. The female literacy rate, however, posted greater gains, at 11.8 points increase between 2001 and 2011, compared with the male literacy rate, which only grew by 6.9 points. More females came into the fold of the literate than males.

*Source: 2001 and 2011 Census*

Eleven states and Union Territories have recorded literacy rates below the national average of 74.04%. This include Bihar, Jharkhand, Andhra Pradesh, Madhya Pradesh, Chhattisgarh, Uttar Pradesh and Rajasthan. Over the last decade these states have improved literacy rates anywhere by 6.2% to 24%. While Bihar is the most laggard, at a literacy rate of 63.8%, it has made substantial improvement over its Census 2001 performance of 47%. The most impressive gain was made by Jharkhand, which improved on its Census 2001 figure of 53.6%. The state’s literacy rate is 67.6%. In Rajasthan, the male literacy rate is 80.51%, while the female literacy rate is 52.66%. This is a huge gap. The Goa’s overall literacy rate in the state stood at 87.40 per cent and the same is 92.81 percent among males and 81.84 percent in females.

More heartrendingly new female literates outnumbered male literates during the past decade. Ten states and union territorries achieved a literacy rate of above 85%. This is an achievement India can be proud of.

**Total Fertility Rate**

The total fertility rate (TFR) is a more direct measure of the level of fertility than the crude birth rate, since it refers to births per woman. In 2000, the country established a new National Population Policy to stem the growth of the country’s population. One of the primary goals of the policy was to reduce the total fertility rate to 2.1 by 2010. The present total fertility rate in India remains at the high number of 2.62. Thus, India’s population will continue to grow at a rapid rate. The U.S. Census Bureau does predict a near-replacement total fertility rate of 2.2 to be achieved in India in the year 2050.

Demographers expect India’s population to surpass the population of China, currently the most populous country in the world, by 2030. At that time, India is expected to have a population of more than 1.53 billion while China’s population is forecast to be at its peak of 1.46 billion (and will begin to drop in subsequent years).

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Who speaks for the adivasi’s right to the forests?

Aloka Kujur

Much is at stake for the adivasis in Jharkhand. Inhabitants of a region, heavily forested for hundreds of years and rich in mineral and ore deposits, they have lived in close contact with nature, turning to the forest for many of their needs. That itself has been the basis of the protection of forests, which have remained the wealth of the region. This has been probably the most defining character of not only adivasis in Jharkhand but tribal communities across the world.

Adivasis have an inherent right over forest produce and this is implicit in the nature of their traditional relationship with the land and forests. After Independence and the making of a modern nation state, things began to change. The inherent and even unquestionable right of the adivasis over forestland now began to be questioned. Indeed the nature of their link with the forest was now threatened by the new economic and industrial forces, which came into play. This in a nutshell is the root of a conflict between forces industrialisation for an exploitation of the rich natural resources of the region and adivasi way of life, which is based on retaining the forests. What is crucial in such a debate or even conflict is the stand by the government of the land. Whose interest will it protect and to what extent?

Indeed the challenge for any government and policy maker is to evolve a development model, which focuses on the interests of these forest communities yet opens out the potential of the region to forces of modernisation and puts in place a people-centric development. It is however easier said than done. Let us put it in perspective. Jharkhand is governed under the V Schedule of the Indian Constitution, which applies to states having a dominant tribal population. There exist a slew of measures, of laws and Acts, inherited from the colonial period, and others passed by Parliament meant to augment, strengthen and protect interests of the adivasi, his link with the land, water and forests. Of course, these did not come as largesse from an enlightened establishment. Many of these were hard fought battles, which mark a little known history of the adivasis in this eastern region. The
Chota Nagpur Tenancy Agricultural Act (CNT) 1908 and Santhal Pargana Tenancy Agricultural law (SPT) 1949 have been a result of such agitation. The CNT expressly states that agricultural land cannot be sold or transferred to a non-adivasi and certainly not for commercial purposes. In fact both these Acts are singular in their provisions for protection of adivasi lands, traditional self-governance and preservation of culture.

The agitation and the issues that it stood for have remained a truism for the region over the last few decades while new political systems have marked history beginning with Independence. More recently in 2000, the formation of new states including Jharkhand carved out of the erstwhile larger ones also signified a change. What did these changes signify for the adivasis? With priorities of the ruling classes changing, with larger industrial and commercial interests taking predominance, there has been over this period, a gradual but palpable dilution of the commitment towards protection of these forest communities. According to sources, there has been a loss of 22,00,000 acres of land due to breaches in the existing laws ever since Independence.

In 2003, a committee was formed to make amendments in CNT and SPT Acts. In nutshell, the entire effort has been to push the people out from the forestland and make it available for the industrial and commercial lobby eying the land, the forest produce and what lies beneath the ground. What this government and any government needs to unequivocally do is to ensure that this is protected and the adivasis have an unfettered rights to the forests, centered around their traditional relationship with the land. Instead there has been a reversal, a violation of these rights in subsequent measures including through legislation. The Land Acquisition Act 1894 upholds the supremacy of the sovereign for total colonization of any territory in the name of ‘public interest’ and the 2007 Amendment to this historical Act dealt with the rehabilitation and compensation of communities having traditional rights over.

The devastation that such measures have wreaked is all too obvious. The Torpa region, 90 km from Jharkhand’s capital, Ranchi stretching over about 12,000 acres is home to the Munda Adivasis. Breathtakingly beautiful, dotted with mountains, forests, rivers and canals, this has been protected by the CNT Act and the community enjoyed control over all collective resources of the land. Now this land has been marked to be allotted to Mittal Steel, in sheer violation of not only the spirit but the letter of the Acts that are in place. The area marked is not only forestland but fertile. According to the CNTAct, such a transfer requires the express consent of the Gram Sabha. These are not isolated cases. Across its pristine landscape, tribals are getting displaced due to various developmental projects. Baitala’s Munda Adivasis are displaced by HEC. The Adivasi of Barwadih, Manika, Vishnupur, Satbarwa forest region are struggling for resettlement.

Meanwhile the plunder continues. According to Munsawar, a villager “Baitala region was once very rich. But the mafia has cleared the forests Forest department doesn’t take any action against the mafia but when the local people cut wood or take forest produces for their routine use, they are sent to jail. People are unaware of their rights on the forest as the Right on the Forest Act is not properly publicised here.”

The powers that be are playing for very high stakes in Jharkhand. The communities most vulnerable to this onslaught are clearly the ones who will lose not only the physical access to land but see the destruction of a way of life which has sustained them for generations. Not that they are giving in without a fight. The Bhumi Raksha Morcha has started a movement covering 44 villages which are threatened by such displacement. Such movements will need to be augmented and supported by all those who believe development models need to fine-tuned to the intrinsic and organic needs of a settled community and not the other way round.

...(Charkha Features)
Climate Change (CC) is the change in the statistical distribution of weather over period of time that ranges from decades to millions of years. It can be a change in the average weather or a change in the distribution of weather events around an average. Climate Change may be limited to a specific region, or may occur across the whole Earth. It can be caused by recurring, often cyclical climate patterns such as El Nino-Southern Oscillation, or come in the form of more singular events such as the Dust Bowl. In recent time, especially in the context of environmental policy, climate change usually refers to changes in modern climate or anthropogenic climate change, more generally known as “global warming” or “anthropogenic global warming”. (Anthropogenic meaning effects, processes or materials those are derived from human activities.)

Ozone Layer Depletion

The earth’s atmosphere is divided into three regions, namely troposphere; stratosphere and...
The stratosphere extends from 10 to 50 kms from the Earth’s surface. This region is concentrated with slightly pungent smelling, light bluish ozone gas. The ozone gas is made up of molecules each containing three atoms of oxygen; its chemical formula is O₃. The ozone layer, in the stratosphere acts as an efficient filter for harmful solar Ultraviolet B (UV-B) rays. Ozone is produced and destroyed naturally in the atmosphere. The ozone depletion process begins when CFCs (used in refrigerator and air conditioners) and other ozone-depleting substances (ODS) are emitted into the atmosphere. Winds efficiently mix and evenly distribute the ODS in the troposphere. These ODS compounds do not dissolve in rain, are extremely stable, and have a long life span. After several years, they reach the stratosphere by diffusion. Strong UV light breaks apart the ODS molecules. CFCs, HCFCs, carbon tetrachloride, methyl chloroform release chlorine atoms, and halons and methyl bromide release bromine atoms. It is the chlorine and bromine atom that actually destroys ozone. It is estimated that one chlorine atom can destroy from 10,000 to 100,000 ozone molecules before it is finally removed from the stratosphere.

When ultraviolet light waves (UV) strike CFCI₃ molecules in the upper atmosphere, a carbon-chlorine bond breaks, producing a chlorine (Cl) atom. The chlorine atom then reacts with an ozone (O₃) molecule breaking it apart and so destroying the ozone. This forms an ordinary oxygen molecule (O₂) and a chlorine monoxide (CIO) molecule. Then a free oxygen atom breaks up the chlorine monoxide. The chlorine is free to repeat the process of destroying more ozone molecules. A single CFC molecule can destroy 100,000 ozone molecules.

The decade of the 2000s (2000–2009) was warmer than the decade spanning the 1990s (1990–1999), which in turn was warmer than the 1980s (1980–1989). The global surface temperature anomalies from 1998 to 2009 (up to Oct.) based upon instrumental observations since 1860 are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Temperature Anomalies (in Celsius)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>0.52 °C</td>
</tr>
<tr>
<td>1999</td>
<td>0.26 °C</td>
</tr>
<tr>
<td>2000</td>
<td>0.24 °C</td>
</tr>
<tr>
<td>2001</td>
<td>0.40 °C</td>
</tr>
<tr>
<td>2002</td>
<td>0.45 °C</td>
</tr>
<tr>
<td>2003</td>
<td>0.45 °C</td>
</tr>
<tr>
<td>2004</td>
<td>0.43 °C</td>
</tr>
<tr>
<td>2005</td>
<td>0.48 °C</td>
</tr>
<tr>
<td>2006</td>
<td>0.42 °C</td>
</tr>
<tr>
<td>2007</td>
<td>0.40 °C</td>
</tr>
<tr>
<td>2008</td>
<td>0.49 °C</td>
</tr>
<tr>
<td>2009</td>
<td>0.44 °C (January-October)</td>
</tr>
</tbody>
</table>


All these figures have an associated uncertainty of ± 0.1 °C.

**Causes of Climate Change**

Climate Change is mainly caused by carbon mono-oxides and di-oxide emissions from heavy industrial activity and motorized vehicles. Gases extensively used in refrigerators, air-conditioners, freezers and aerosol cans are equally responsible. Also widespread destruction of trees could significantly increase the amount of Co2 in the atmosphere.

The majority of the heat which gets absorbed in the atmosphere is by the molecules of carbon dioxide, water vapor, methane, nitrous oxide, chloro fluoro carbons (CFCs) and ozone, collectively known as ‘Greenhouse Gases’ (GHG) because they are much more efficient at reflecting or trapping radiation than other gases. This trapped radiation contributes to the energy radiated back down to warm the Earth’s surface and the lower atmosphere.

**India and Climate Change**

India is the world’s fourth largest economy and fifth largest greenhouse gas (GHG) emitter,
Impact of Climate Change in India

- **Poverty** - India considers poverty as the most severe and pressing social challenge. Although the per capita growth rate during the last five years has been as high as 7.3%. Despite this, about 1/3rd of the population (about 400 million people, live on less than a dollar a day). Therefore, natural calamities like floods, heavy rains, droughts etc. will most adversely affect the poor population who are unable to protect themselves from the vagaries of nature.

- **Inequality** - Climate change is expected to have greater adverse effects on agriculture rather than on industrial output and it will exacerbate rural-urban inequality. Regional climatic inequalities may coincide with and reinforce existing economic inequalities. For example, increased flooding may affect poor coastal States of Orissa and droughts may strike in lower per-capita income States as U.P and Rajasthan.

- **Public Health** - The relationship between climate change and health outcomes is complex. If temperature rises in warmer parts of the country, heat waves may become intense and long lasting resulting in increased incidence of heat stroke and related diseases. Warmer climate also worsens the air pollution and increases the potency of air borne diseases. Floods and droughts may lead to water contamination and worsen unsanitary conditions, increasing incidence of diseases as malaria and dysentery.

Therefore, renewed vigor is needed to implement major policy reforms in the health sector along with trained medical personnel.

- **Agricultural Challenges** - India's agricultural sector considered the Achilles' heel of the Indian economy will suffer the greatest direct impact of climate change. Agriculture generates less than 18 percent of India's GDP and the figure is rapidly declining. 70 percent of Indians live in rural areas accounting for about 5% of global emissions. India's emissions increased 65% between 1990 and 2005 and are projected to grow another 70% by 2020 as shown in the chart below. Although, India's emissions are low compared to those of other major economies. India accounts for only 2% of cumulative energy-related emissions since 1850. On a per capita basis, India's emissions are 70% below the world average and 93% below those of the United States. India remains home to the world's largest number of poor people, with nearly 35% living on less than a dollar a day. Its economy is growing rapidly, however, with GDP rising about 8% a year over the past five years. As the economy has grown, emissions intensity (GHGs per unit of GDP) has declined significantly. India's GHG intensity is currently 20% lower than the world average (and 15% and 40% lower than the United States' and China's, respectively). Factors contributing to the decline in energy intensity include improved energy efficiency, increased use of renewable and nuclear power, expanded public transport and energy pricing reform.

Protection of the environment has to be a central part of any sustainable inclusive growth strategy. In the Eleventh Plan of India, consciousness of the dangers of environmental degradation has increased greatly. Population growth, urbanization and anthropogenic development employing energy-intensive technologies have resulted in injecting a heavy load of pollutants into the environment. More recently, the issue assumed special importance because of the accumulation of evidence of global warming and the associated climate change.

![India's GHG Emission Trends and Projections (1990-2020)](chart)

*Source: National Action Plan on CC, GOI, 2008*
and nearly 65 percent of the workforce is engaged in farming, so the challenges to agriculture will directly affect the majority of Indian population. The states most at risk are India’s northeast, including Bihar and Uttar Pradesh, which have a combined population of 250 million, and the adjacent states of West Bengal and Orissa.

Due to climate change, agriculture will become more capital-intensive and marginal; small farmers will be forced to sell their land which may lead to economic inequality; mid-sized farms will become less economically viable, unless farmers switch to high-end cash crops as wine grapes and flowers etc.

- **Food Security**: Projected climate change impacts will put pressure on India to make more effective use of its comparative advantages and turn away from self-sufficiency towards crop specialization and trade on the international market to maintain its food security. If such transition does not begin quickly then India could once again face acute food shortages due to overall declines in agricultural productivity.

- **Rural Labour Surplus**: As a large number of Indian labour depend upon small, labour-intensive transitional farms, therefore, a larger-than-optimal population is at risk from CC, increasing their susceptibility to marginal disruptions; limits the development of excess agricultural capacity to deal with climatic constraints and discourages adoption of more efficient technological solutions that could aid in providing a response to CC. Widespread climate stress, as major droughts or floods, could disrupt the village structure of the entire country, putting millions at risk.

- **Flooding**: Flooding generated both by increases in runoff from melting Himalayan glaciers and more frequent severe storms will pose a threat to India’s heavily populated river plains. In low lying coastal areas, sea-level rise and storm
surges will create similar challenges, with the added dimension of salt water intrusion rendering soil infertile. Increased seasonal flooding is already affecting productivity in Bihar (Kosi Flood—a sorrow of Bihar). Frequent major floods could disrupt agriculture and displace millions from the Indian agricultural heartland.

**Energy Challenges**—The bulk of the country’s energy comes from fossil fuels, therefore, India is poised to become a major contributor to global warming as emissions from power generation industry and transportation increases. As urbanization and mobility requirements are rising, the demand for modern forms of power and transportation are bound to rise. CC will impact on India’s energy needs as rise in temperature will reduce winter heating and raise demand for summer cooling. Hydroelectric capacity would reduce by diminution of river flows, reducing the potential for it to substitute for fossil fuels in power generation. In addition, CC policies mitigation such as caps on emissions, necessity of developing cleaner energy production could impose greater constraints on the energy production in India.

**Urban Challenges**—The cities will face increased challenges from CC, although the direct effects on India’s cities and towns may be less disruptive than rural areas. Indian urban infrastructure is poorly developed and over-stressed in most cities. Floods and heavy rains are likely to collapse or sweep away shanties and makeshift urban dwellings where many of the urban poor live. Water scarcity due to glacial melting and shifts in rain patterns will reduce the supply of drinking water when migration into cities increases its demand. A mass migration of rural population to cities could overwhelm critical urban systems as health, transportation, housing, energy and water.

India has more than 345 registered CDM (Clean Development Mechanism) projects, more than any other country and about a third of all projects globally. (In terms of the overall volume of CDM reductions, China ranks first with 51% followed by India at 14%) The largest project categories are biomass and wind power.

**Climate Change mitigation measures in India:-**

- **Renewable Energy**—The Eleventh Five Year Plan sets a target of increasing the installed capacity to 23,500 MW by 2012; or more than 10 percent of total installed capacity, with wind comprising 72 percent and biomass hydropower about 14 percent each. Under Rural Electrification Policy (2006), electrification of all villages must be completed by 2012. Of the 80,000 villages that have no access to electricity, 18,000 villages in remote areas must be electrified through renewable energy. Currently, about 3000 villages have been electrified through solar energy.

- **Wind Power**—Comprising over 65 percent of renewable capacity, India is fourth in terms of wind power generation worldwide. The Ministry of New and Renewable Energy estimates the overall potential for wind power at 45,000 MW, with only about 6270 MW currently developed.

- **Solar energy**—The Government recently introduced a demonstration programme to support large grid-interactive solar projects.
The programme sets a feed-in-tariff of 12 rupees per kilowatt-hour (kwh) for solar photovoltaic power and Rs. 10/kwh for solar thermal power generation through 2009 for qualifying projects.

- Other Renewable- Biomass projects for power generation receive fiscal incentives including subsidies, income tax holidays, excise duty and sales tax exemptions, and accelerated depreciation. The CDM also attracts developers to build biomass projects.

Hydro power contributes 33,642 MW (or 26%) of electricity generated in India. The Eleventh Five Year Plan calls for an additional capacity of 15,585 MW by 2012 and the Accelerated Hydro Development Plan targets 50,000MW of new capacity by 2025-26.

- Coal- 55 percent electric generation depends upon coal. About 7 percent of the installed coal capacity, in inefficient plants will be replaced by 2012 and an additional 10,000 MW will be retired or reconditioned by 2017. Three R&D plants based on Integrated Gasification Combined Cycle technology has been established.

- Nuclear Power- It presently accounts for 3 percent of total power generation. The Integrated Energy Policy sets a goal of increasing installed nuclear capacity from about 3900 MW to 20 gigawatts (GW), by 2020. To meet these targets, the Eleventh five Year Plan targets an additional 3160 MW and the Twelfth Five Year Plan will further increase the capacity by 11,000 MW, with the National Thermal power providing an additional 2000 MW.

- Transportation

✔ Vehicles- The National Auto Fuel Policy (2003) mandated that all new four-wheeled vehicles in eleven cities meet Bharat Stage III emission norms of conventional air pollutants, (similar to Euro III emission norms), and comply with Euro IV standards by 2010. The largest urban fleet of compressed natural gas (CNG) vehicles was introduced in New Delhi and Mumbai to reduce pollution. By March 2007, 375000 vehicles were converted, with three-wheelers forming the largest share (64%).

✔ Mass Transit- The Delhi Metro subway will cover the entire metropolitan region by 2021. The Bangalore Metro Phase I is expected to be operational by 2011 and projected to provide transportation for one million passengers per day. Currently, bus rapid transit systems are in the city of Indore and are being tested in Delhi.

✔ Bio Fuels- The government is formulating a national policy on biofuels to introduce financial incentives, develop R&D for production and commercialization of ethanol and jatropha, and establish a national bio fuel development board.

✔ Forestry- The Eleventh Five Year Plan proposes an increase in the forest and tree cover of 1% a year by 2012.

Conclusion

As is obvious, the predictions of global warming are dire. However, it is clear that if no immediate steps are taken by world leaders, global warming could prove much more than just an economic threat but a survival threat. There is need for complementary efforts to scrutinize and rethink existing schemes on global warming that may add to vulnerabilities.

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Land is a vital resource as 90 per cent of the world’s food comes from land-based agricultural systems and the requirement of food is growing with the ocean’s fish and natural ecosystems being depleted. Protecting and nurturing agricultural soils, which are the cornerstone of food production, has to be a central feature of sustainability. Yet it has been largely overlooked for quite some time now. In a book titled A Green History of the World, Clive Ponting pointed out that the fall of the ancient Greek, Roman and Mayan empires was more the result of a decline in agricultural sustenance due to soil erosion than of outside forces. Lately global warming and climatic changes have had an adverse effect on the structure of the soil in most parts of the world.

As the world’s population crossed 6 billion, croplands and grazing lands are being increasingly pressed to yield more crops and other products.
According to a report of the U.N. Environment Programme, poor agricultural practices of the past 50 years have led to degradation of 22 per cent of land used for crops, grazing or forestry – almost 2 billion hectares or 4.8 billion acres. Throughout the world, agricultural soils have been (and continue to be) degraded by erosion, the build-up of salts and other problems that can only undercut future productivity. Various sources suggest that 5 to 10 million hectares are lost annually to severe degradation with resulting impacts on agricultural yields.

Arable land has shrunk from 0.38 hectares (0.94 acres) per person in 1970 to 0.23 hectares (0.56 acres) in 2000. If the current population projections are correct, the amount of cropland per person will decline to 0.15 hectares (0.37 acres) by 2050. In Asia, cropland will be even more scarce – 0.09 hectares (0.22 acres) per person in the next 50 years.

The most pervasive and damaging force is erosion, the process of soil and human particles being carried away by water and wind. Nowadays the rate of soil erosion has become very high due to increase in activities of humans. In fact, soil erosion is a matter of global concern as it is destroying our resource base very rapidly. According to estimates by the International Soil Resource Information Centre in Netherlands, every year 3 million hectares (7.4 million acres) of cropland are ruined by erosion, 4 million hectares are turned into deserts and 8 million hectares are converted to non-agricultural uses.

Indian Perspective

In a recent study conducted by the Space Application Centre (SAC) and Earth Observation System (EOS) in Bangalore, it was found that one-third of the country’s land was being degraded and a significant portion was getting converted into deserts. The study revealed that 105.48 million hectares of land is undergoing processes of land degradation. This is 32.07 per cent of the total geographical area of the country.

Rajasthan, Jammu and Kashmir, Gujarat and Maharashtra are undergoing the maximum amount of degradation among all the states. The study further reveals that in West Bengal the total area under land degradation is 20 lakh hectares which is nearly 30 per cent of the state’s geographical area. As in most states, water erosion, vegetation loss and wind erosion causes the maximum amount of land degradation in West Bengal.

Degradation obviously results in loss of topsoil which is quite high in our country. The rate of loss is higher in regions with higher population density, mainly due to increased agricultural activities. Continuous cultivation of land by only one type of crop further adds to the loss of soil fertility. Once the topsoil (about 20 cm. thick) is lost, the sub-soil becomes a part of the layer for cultivation. This layer has less nutrient retention power, organic matter and aeration. The soil, as a living organic system, gets disturbed due to this which in turn has a negative impact on soil fertility and crop productivity. Indeed the term desertification is used to denote this process. Thus desertification refers to the formation and expansion of degraded areas of soil and vegetative cover in arid, semi-arid and seasonally dry areas, caused by climatic variations and human activities.

In a study published in the Journal of Soil and Water Conservation, scientists of the Central Soil and Water Conservation Research & Training Institute, Dehradun, classified soil erosion into six categories – from slight in dense forest areas and regions (where wind erosion is prevalent) to very severe in the Shivalik, the outer-most range of the Himalayas. Though some parts of the Shivalik are thickly forested, the average erosion rate there is more than 80 tonnes per hectare per year. A major reason behind this is the seismic activity in the Himalayas, which loosens the soil.
Besides the Shivalik, a large part of Peninsular India, including the Western Ghats and the black cotton soil regions and coastal zones are the most vulnerable. It may be mentioned here that in Maharashtra, around 70 per cent of the cultivated land has been affected by erosion of which about a third is no longer cultivable. Though the situation may not be so bad in the other states, the country loses soil at a rate of 16 tonnes per hectare annually, which is more than three times the acceptable limit of 4 to 5 tonnes. However, it needs to be pointed out that almost half of India’s landmass needs conservation measures to check soil erosion.

The major practices that expose soil to erosion and lead to desertification are:

(i) Over cultivation,
(ii) overgrazing, and
(iii) deforestation.

Over cultivation: As is well known, the first step in growing crops has been plowing to control weeds. The drawback is that the soil is then exposed to wind and water erosion. It is ironical that plowing is frequently deemed necessary to loosen the soil to improve aeration and infiltration but the effect is reverse. Despite the harmful impacts inherent in cultivation, systems of crop rotation have proved sustainable. But, as food or economic demands cause the abandonment of rotations, degradation and erosion exceed regenerative processes and the result is gradual decline in soil fertility or desertification.

Another aspect of over cultivation involves the use of inorganic versus organic fertilizer. The failing of chemical fertilizer is in its lack of organic matter to support soil organisms and build soil structure. Under intensive cultivation, which is now normally done, nutrient content must be kept high with inorganic fertilizer. With the soil’s loss of nutrient-holding capacity, application of inorganic fertilizer is prone to simple leach into waterways causing pollution.

Overgrazing: Grasslands that receive too little rainfall to support cultivated crops have traditionally been used for grazing livestock. As grass production fails to keep up with consumption, the land becomes barren and wind and water erosion takes place. According to the World Resources Institute, overgrazing during the past 40 years or so has degraded 679 million hectares. It has further pointed out: “Overgrazing has profoundly upset the dynamics of many range ecosystems, reducing biodiversity and altering the feeding and breeding patterns of birds, small mammals, reptiles and insects”.

Deforestation: Forest ecosystems are extremely efficient systems both for holding and recycling nutrients and for absorbing and holding water because they maintain a porous topsoil. However forests continue to be cleared at an alarming pace – about 27.0 million acres (11.3 million hectares) per annum, most of which is in the developing countries, according to the Food & Agricultural Organization (FAO). Over the past three decade, an area over three times the size of France has been lost and much more has been degraded by fragmentation. About 80 per cent of the deforestation has been for agricultural purposes because of growing demands for food.

Conservation Strategies

Soil conservation is nothing new and needs to be practiced seriously in the coming years. There is a wide range of agricultural, ecological, land entitlement and other measures that can stop or even reverse soil degradation. The following are some of the important ways in which soil cover may be conserved:

1. Revegetation including elaborate planting and suppression of fire, grazing etc.;
2. Crop management including maintaining cover at critical times of the year, rotation and cover crops;
3. Slope runoff control including terracing, deep tillage and application of humus, transverse hillside ditches to interrupt runoff, contour ploughing and preservation of vegetation strips;

4. Prevention of erosion from point sources including intelligent geomorphic location, channeling of drainage water to non-susceptible areas, and covering of banks, cuttings etc. with vegetation;

5. Suppression of soil erosion including soil moisture preservation and increase in surface roughness through ploughing up clods by planting windbreaks.

In India, it is estimated that almost half of the total landmass needs conservation measures to check soil erosion. Efforts to promote healthy agriculture have been initiated, specially in the populous countries of the Third World. Various U.N. agencies and nongovernmental organizations have been working in the developing world to foster sustainable agriculture for subsistence farmers. The FAO programme called the Farmer-centred Agriculture Resource Management (FARM) is a cooperative venture of eight Asian countries: China, India, Indonesia, Nepal, Philippines, Sri Lanka, Thailand and Vietnam which has become quite effective. The mission has been “to support improved sustainable agricultural resource management and the attainment of household security through innovative approaches in rainfed areas of Asia”.

At this juncture, efforts to tackle land degradation and soil conservation must be linked to measures fostering economic and social change as also environmental protection. However, such efforts have to be properly planned with the help of experts from various disciplines, including agricultural science and environmental science with increased allocation of resources to ensure long-term sustainability of the soil which, in turn, would lead to higher agricultural productivity and more income for the farming community.

### Table-I: Sources of Selected Inorganic Soil Pollutants

<table>
<thead>
<tr>
<th>Element</th>
<th>Major Uses</th>
<th>Sources of Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic (As)</td>
<td>Pesticides, plant desiccants (drying agents), animal feed additives, detergents</td>
<td>Coal, petroleum, mining debris, metal processing, atmospheric deposition</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>Electroplating of nuts &amp; bolts, paint pigments, plastic manufacturing, batteries</td>
<td>Atmospheric depression, metal processing, production of chemicals</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>Stainless steel, chrome-plated metals, paint pigment, brick manufacture</td>
<td>Manufacturing of metals, domestic wastewater, sewage sludge</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>Electric wires, plumbing brass electroplating, antifouling paint, bronze</td>
<td>Metal manufacturing, sewage sludge, atmospheric deposition, metal processing</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Batteries, metal products, pigments, chemicals, combustion of oil, coal &amp; gasoline</td>
<td>Atmospheric fallout, metal manufacturing, sewage sludge</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>Manufacturing of plastics &amp; electrical equipment, production of chemicals, pesticides</td>
<td>Coal-burning power plants, atmospheric deposition</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>Metal alloys, chemical production, batteries, combustion of oil gas &amp; coal</td>
<td>Domestic wastewater, metal processing, sewage sludge, atmospheric fallout</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>Coating on metals, alloys brass, batteries, rubber manufacturing</td>
<td>Metal manufacturing, domestic wastewater, atmospheric fallout</td>
</tr>
</tbody>
</table>


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