# ORISSA ECONOMIC JOURNAL

Vol. XXXVII No. 1 & 2

Jan.-June & July-Dec. 2005


ORISSA ECONOMICS ASSOCIATION

BHUBANESWAR

# Orissa Economic Journal

Vol. XXXVII No. 1 & 2

Jan.-June & July-Dec. 2005

Editor :

**Prof. Baidyanath Misra**

**17, Saheed Nagar**

**Bhubaneswar**


**ORISSA ECONOMICS ASSOCIATION**

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# India That Can Smile Provided.....

Horace Walpole, the noted British writer wrote more than 200 years ago, 'the world is a comedy to those that think, a tragedy to those that feel'. When we analyse the statement of Goldman Sachs (2003) that the 21st century is the century of USA, China and India the same contrast between thinking and feeling is apparent. There are three redeeming features in India for which it is said that India will be more or less a super power in the 21st century, super power in the economic sense.

## MORE YOUNG AND LESS DEPENDENCY :

One such redeeming feature is that our young population is more and the dependency ratio is less than many other countries of the world. For example the median age in India in 2000 was less than 24, compared to 38 in Europe, 41 for Japan and 30 for China. The latest study shows that the proportion of young people (0-15) in percentages by 2050 would be 19.7 for India, 16.3 for China, 15.5 for developed world and 21 for the world. When we consider the proportion of working people 16-64 in percentages, by 2050 it would be 59.7 for India, 53.8 for China, 51 for developed world and 58 for the world. On the other hand, the old age (65+) dependency ratio in percentages by 2050 would be 20.6 for India, 29.9 for China, 33.5 for developed world and 21 for the world.

Abramovitz in his 'Catching up, forging ahead, and falling behind' points out that social capability is a major factor in economic growth. He further points out that social capability gives rise to adaptability and the notion of adaptability suggests that there is an interaction between social capability and technological opportunity. In Solow's neo-classical model of growth technical progress (which is according to him an exogenous factor) is the main driving force of long-run growth. Since endogenous growth, has a tendency to attract exogenous growth and endogenous growth depends on social capability and adaptability, India has great opportunity in forging ahead due to 'its young labour force.

China and India, their main focus is on the capability of Indian people, people who are young, vibrant and prepared to meet any challenge that comes in the way of change.

## INDIAN WORKERS ARE INGENIOUS :

MD Batra writing on 'India's strength and ingenuity' in 'cyber age' indicates how one South Korean businessman compares the working performance of Indian and Chinese workers. According to him, Chinese workers are hard working, but they need clear instructions, a blueprint to follow, to complete the work. Indian workers are probably not as self-disciplined and hard working as the Chinese, but they are resourceful and ingenious. If there is a problem, they won't sit down and wait for some one to come and help them. They would find creative ways to solve the problem. If something is broken or missing, they would improvise a substitute and fix it. He also indicated that Indian workers those who don't have much education display the same aptitude for innovativeness.

We can give another example of Indian ingenuity. In 1991, the US state department banned the sale of computers to India that could do more than 900 million operations per second. How did India respond? In no time, the Centre for Development of Advanced Computing developed a powerful series, Param-1000 which at that time was one of the most powerful computers of its kind, capable of diversity of application in fields such as engineering, business, industry, space and nuclear technology. Indian ingenuity served the super computing needs of the Indian scientific community and made possible the development and enhancement of India's nuclear weapons programme. The USA which treated India as a pariah earlier is now talking of strategic partnership even in case of peaceful transfer of nuclear technology.

## INFRASTRUCTURE WOES :

The point which worries us is that even though our capability is our people, they cannot work in a vacuum. When a satellite is put to orbit, it requires high velocity to ensure exit from the earth's gravitational force, similarly if our economy is to exit from the gravitational pull of poverty, it requires exit velocity of double digit growth rate over the next two decades. Obviously for attaining such a high level of growth we require improved infrastructure that can help and accelerate the process of growth. It is therefore, said that infrastructure is a sine qua

non of economic development. Agricultural development needs irrigation, industrial development power, trade depends on transport and communication and such other physical facilities that are prerequisites for development. India's infrastructural woes are so great that even the ablest of the entrepreneurs find difficulty in managing adequate supply of power to increase the productivity of their industries. Industrial states like Maharashtra and Karnataka encounter four to eight hours of power outage in peak months. There is not enough power available but wherever it is available, the supply is not reliable. It is estimated that power theft, transmission and distribution losses and other technical problems drain 40 per cent of power. In irrigation, it is understood that almost 25 per cent of the irrigation facilities that are available is wasted due to lack of proper maintenance, and water harvesting structures which can provide immense benefit for increasing the productivity of agriculture is not given due importance. If India has to succeed in increasing the pace of development and compete with Asian neighbours like Singapore, South Korea, China, Taiwan, it has to upgrade its clogged roads, over crowded airports, uncertain power and water supply and other important physical infrastructure to effectively utilise the young, active and intelligent labour force to keep the economy in perpetual motion of development.

## IMPROVEMENT IN IT SECTOR :

Another redeeming feature of India's economy is that there has been tremendous improvement in the IT sector which has been exciting the world's imagination so much so that many outstanding MNCs are competing with each other to hire Indian IT candidates. India has also some fantastic world class companies including INFOSYS Technologies, WIPRO, TATA Consultancy Services, among the software companies for which India has become a world leader. And in the growing field of biotechnology, petrochemicals and pharmaceuticals, India has acquired international reputation. Because of such spectacular improvements, George Evans, the Director of International Equities at the Oppenheimer Funds has shown preference to India for foreign investment than to China.

Simon Wasserman, Chairman of AON Global said at a recent conference on outsourcing, 'India has everything that a multinational needs. It is a young country with creative minds and a huge market

Confederation of Indian industry in a recent study points out that India would be entering a new threshold of the knowledge economy and could emerge as a global hub for specialised knowledge processing for global corporations.

**BUT IT CONFINED TO A FEW :**

All this makes us proud that India is creating a global buzz, an image that enthrals us. Though we raise a toast to the rising fortunes of IT candidates, let us also begin to realise that a small part of the population has joined the growth process and reap the benefits while the excluded majority watch from the margins, in despair and increasingly sullen. The major problem in India is, that even though we have millions and millions of people who are able and willing to work, they have no opportunity to work due to shortage of skill. This is a recipe for not only loss of competitiveness but also social schism and criminality.

We have a rich India where 20 per cent harbours about half of the income of the people of the country and there is a bottom 20 percent that harbours less than one-tenth of it..One NCAER study shows that we have now three Indians – one that is well on its way to income growth from a good base comprising about 200 million or so people, spread across large and small towns and pockets of rural India as well. We may call it Arriving India. The bottom 400 million is a disappointment with less facility for improvement. The remaining 400 million is somewhat in between. The top end is getting richer, the middle is like the middle everything in middle, slow bum, but the average per capita income of this group is growing while there are all kinds of contrast among the bottom - some are getting less poor, some others more poor and some staying at the same level. All this means they are a great liability to the society.

If the civil society wants to help them, they cannot just do it by allocating more funds for education and health or preventing dropouts from schools by providing mid day meals. Converting a dispersed mass of undernourished and uneducated young fellows into a disciplined army of individuals who learn and apply their knowledge for economic and social change is a political process. What is pointed out in Economic Times in an editorial (May 17. 05) is what we need is mass politics that will simultaneously make state delivery system work and empower those

## LIBERALISATION HAS NOT NEGATED PLANNING :

It is heartening to note that inspite of liberalisation and globalisation, the planning process in India has not yet been stalled. The Government has recognised the necessity of planning to improve the economy's productive capacities, involving both physical and human resources to attain the desired economic and social ends (and not just material attainment). Even though during the last decade, there has been some significant change in the growth process, it is admitted that market mechanism alone cannot solve some of the imponderable difficulties that confront the economy. In analysing the 'perspective, objectives and strategy' of the Tenth Plan, the Planning Commission points out that though in the 55 years that have passed since our independence, the challenges, the imperatives and the capabilities of the nation have undergone profound changes, there are still many hurdles that have to be corrected by planning.

According to the Tenth Plan, the degree of democratization that has been achieved in the political sphere is, however, not matched by its progress on the economic front. There are still too many controls and restrictions on individual initiatives and many of our developmental institutions continue to exhibit paternalistic behaviour which today has become anachronistic. For the country to attain its full economic potential, and for the poorest and weakest to shape their destiny according to their own desires, it requires a comprehensive reappraisal not only of our development strategy, but also of the institutional structures, that guide the development process. The Tenth Plan aims at achieving these objectives.

## SELF-CENTERED POLITICAL AUTHORITY :

Though the Planning Commission has pinpointed some of the major constraints in the development process, it has not thrown adequate light on the operational mechanism of the developmental administration that is needed to tackle the difficulties. We can cite only two illustrations to show how there is a big gap between outlay and output for which many of the laudable objectives are not fulfilled. In a democratic form of government, the political party in power generally determines the policy of economic programmes. Even though we have a democratic form of government and frequent elections change the nature of government from time to time, the political authority in India often resorts to populism in order to increase its personal power and privileges and to control

economic resources for its own benefit. It does not seem to make any effort to strengthen traditional or institutional resources of authority which result in the weakening of the political organisation. In a heterogeneous social structure and weak economic base, when there are many claimants to secure larger gain from state resources and there is a growing conflict among the contending groups, a self-centered political authority can hardly maintain democratic norm. In order to derive support for personal benefit, the leaders mobilise caste and ethnic groups and demand for reservation in different types of services including representative institutions.

**SELF-ASSERTIVE CIVIL SERVICE :**

On the other hand, the civil service in India with their upper class prejudices could hardly be expected to meet the requirements of social and economic change that development administration entails. Even in some of the developed countries administrative culture became an inhibiting factor in the speedy implementation of welfare programmes. We can illustrate the cases of two most important countries like USA and Great Britain whose examples are often cited in comparison with developing countries. Those who have read Peter's Principle, know that in an organisation, an individual will rise to his level of incompetence., This is true of Parkinson's famous dictum that bureaucratic work expands to fill the time available to do it in. Charles Peter in his book, 'How Washington Really Works', concludes that it does not work; Bureaucrats confer, the President proclaims and the Congress legislates, but the impact on reality is negligible, if evident at all.

In 'Yes Minister', a number of interesting examples have been given regarding the role of bureaucracy in Great Britain. We can only mention here three basic articles of faith of bureaucracy. These are (i) It takes longer time to do things quickly, (ii) It is more expensive to do things cheaply and (iii) It is more democratic to do things secretly. Indian experience is no different from that of Great Britain. On the other hand, it is worse. We can cite just one example how red tape in India takes myriad forms, from expectation of illegal gratification to turf war. Quoting Dr. Jayanta Roy of the Confederation of Indian Industry (CII), the Financial Times (London) wrote recently "(A) typical international trade deal from India involved upto 30 separate parties, 257 signatures and

port for upto three weeks compared to 24 hours in ports elsewhere in the world". In this digital age, if business transactions are so dilatory, how can India secure cost advantage?

## CLOSE ALLIANCE BETWEEN POLITICAL AUTHORITY AND SENIOR BUREAUCRACY

One more administrative problem which worries us is close alliance between political authority and senior bureaucracy. Bhambri in his 'Bureaucracy in India' argues that senior administrators forged an alliance with politicians not only to brighten their career prospects but also to articulate political views and gain greater share of social resources. It has been commented by many political commentators that there was close collaboration among politicians, bureaucrats and, businessmen in India during the planning era to enable politicians to keep their chair, administrators their power and businessmen their money through licences and permits. And this close alliance among three important constituents of India results in" colossal black money worth 40 per cent of GDP, amounting to about Rs.12 lakh crores today.

## CONCLUSION

All this implies that even though we have capability to meet the emerging challenges of competition in the 21st century, there are some hurdles which must be carefully and judiciously handled so as to (a) improve the efficiency of the economy, (b) reduce the harshness of the political system and bureaucratic control (c) provide wider opportunity to the poor people to get maximum benefit from developmental projects, (d) provide adequate funds for improving' both physical and social infrastructure which involves external economies and (e) make development a people's movement through the help of participatory planning.

"The present challenge is not primarily managerial; it is first of all ethical and political, and is aimed' at the core of our democratic faith". In other words the issue of governance and democratic norm is at the forefront of the development agenda. If we can succeed in achieving these two objectives, we can fulfil the aspirations of our people and meet the challenge of world competition, otherwise it could be the cause of great disappointment and missed development opportunities.

**Professor Baidyanath Misra**

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# Secretary's Report

Mr. President Professor Pradhan; Hon'ble Minister of Revenue, Food Supplies and Consumer Welfare of Orissa Sj. Manmohan Samal, our esteemed Chief Guest; Revered Guest of Honour Professor D.C. Misra; Respected Guest of Honour Professor Baidyanath Misra; Chief Patron Sri Agarwal; Principal Prof. Bose, Chairman Reception Committee; Organising Secretary Smt. Samantray; Joint Organising Secretary Dr. Mahaprasasta; Revered past Presidents of the Association; Officer bearers of the Organising Committee of the Conference; Distinguished guests; Invitees; Fellow delegates; Media persons; Ladies and Gentlemen.

As the Secretary, Orissa Economic Association, I feel uniquely privileged to accord a warm welcome to you all to this 37th Annual Conference of the Association. We are singularly fortunate to have in our midst Hon'ble Revenue, Food Supplies and Consumer Welfare Minister of Orissa, Sj. Manmohan Samal to inaugurate this Conference. We are really grateful to you sir, to have you here with us. We are equally fortunate to have with us our most respected teacher, the doyen of economics Prof. D.C. Misra as the Guest of Honour for this Conference. We are extremely grateful to you sir, for your kind gesture. We also have with us an economist par excellence and our revered teacher Prof. Baidyanath Misra as the honoured guest in this Conference. We are thankful to you sir, for your august presence.

I take this opportunity to present before you a profile of activities of our Association. The Orissa Economic Association was founded in the year 1968 with the noble objectives of promoting the study and teaching in economics in general and stimulating research on the contemporary economic issues of the Indian economy and the state of Orissa, in particular. It was accorded the status of a learned Registered

Society by the Government of Orissa under the Orissa Societies Registration Act, 1868 on April 27, 1968 and enjoys the unique distinction of being one of the oldest registered regional academic associations in the country.

The Association started its operation with only 40 teachers in Economics from different colleges and universities of Orissa as members. In course of time, the membership of the association was made open to non-teachers to receive persons from different walks of life with interest in the study of and/or teaching in economics and economic issues. At present the Association has 03 Institutional Life Members, 282 Individual Life Members and 33 Annual Members and this includes a galaxy of economists of repute, professionals and statesmen, besides teachers and research scholars in the subject.

The Association endeavours to achieve its objectives by organising Annual Conferences, Symposia and Workshops. The first Annual Conference of the Association was held in the historic Ravenshaw College Hall (which originally housed the Orissa Legislative Assembly) on January 27, 1968 with late lamented Professor Sadasiv Misra as its President who later became the President of the Indian Economic Association in its Delhi Session, 1971.

The Association enjoys the distinct honour of organising a two-day Annual Conference regularly since its inception. University departments of economics and different colleges of the State host such conferences. In the Annual Conferences the members present their original research papers on the selected themes. The Association maintains the healthy tradition of selecting two topics of contemporary interest for deliberations in the Conference each year of which one is theoretical or in the context of the country at large and the other with reference to the state of Orissa. The two topics selected for discussion in this year's Conference are :

1. Economics of Value Added Tax
2. Water Harvesting Structures in Orissa

Most often experts in the subjects selected for deliberations are invited to present key-note papers in the concerned subject sessions in the Conference. We are fortunate that this year Sri Pradeep Kumar Jena, Commissioner of Commercial Taxes, Govt. of Orissa and Sri G.B. Reddy, Director, Orissa Watershed Development Mission have kindly agreed to deliver the key-note addresses on the two aforesaid themes respectively.

Since 1987 the Association has been organising an endowment lecture in the memory of Bhubaneswar Mangaraj, an illustrious teacher of Banki. One of the past Presidents of the Association is invited each year to deliver the lecture at the venue of the Conference. Friends, we landed in a soup to have one of our past presidents to deliver the Mangaraj lecture this year. But, as the sheet anchor of the Association, Prof. Baidyanath Misra, teacher of teachers came to our rescue to deliver the lecture on a theme that encompasses both the society and economy. We are thankful to Prof. Misra for his kind consent to deliver this year's Mangaraj Lecture on the theme "Economic Development and Social Ethics".

The Association has been publishing regularly its mouthpiece "Orissa Economic Journal" since 1968. The Presidential Address, the Mangaraj Lecture, the key-note papers and the selected papers presented in the annual conference are published in the Journal. The journal is edited by Prof. Baidyanath Misra. The Journal has earned high appreciation and applause from the teachers and researchers in the subject and libraries of repute in the country.

It gives me immense pleasure to express my heartfelt gratitude to our Hon`ble Chief Guest Sj. Samal for having accepted our invitation to inaugurate the Conference. I am equally grateful to our Guest of Honour, our most respected teacher Prof. D.C. Misra for his kind presence in the Conference and for inaugurating the Association website. I am specially thankful to Prof. Baidyanath Misra for accepting our invitation for releasing the Conference Souvenir as our Honoured Guest, for his keen interest in promoting the activities of the Association

pains he has been taking in editing the papers for the Orissa Economic Journal and for having accepted our request at short notice to deliver this year's Mangaraj Lecture. I am proud enough to express my sincere thanks to the Principal of Christ College Prof. Bose and other office bearers of the Organising Committee for their tireless efforts in organising this Conference with pump and grandeur. I find no words to express my indebtedness to my esteemed teacher Prof. Bhabani Prasad Dash for his sincere guidance in nurturing the Association. My special thanks are due to Smt. Pragna Samantray, Dr. J.S. Mahaprasasta, Sri Dharmabrata Mohapatra, Dr. Gadadhar Rout and other members of the Economics Seminar of this College for their unstinted support. I am extremely grateful to the past presidents of the Association, the members of the present Executive Body and specially to the President Prof. Pradhan for their co-operation. I am thankful to M/s Das & Associates, Chartered Accountants, Cuttack for having audited the accounts of the Association for the financial year 2003-04 ending March 31, 2004 free of cost. I really owe a great deal to the dignitaries, invitees, guests, delegates, paper writers, media persons and to you all ladies and gentlemen for having given me a patient hearing.

I thank you all once again.

**Rabi Narayan Patra**

Secretary

Orissa Economics Association

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*PRESIDENTIAL ADDRESS*

# Dynamics of Poverty And Underdevelopment in Orissa

by

**Dr. N.B. Pradhan**

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Berhampur University,
Berhampur – 760 007

Revered Chief Guest Hon'ble Mr. Manamohan Samal, Revenue, Food Supplies and Consumer Welfare Minister, Govt. of Orissa, esteemed Principal Christ College, Cuttack and Chairman Reception Committee Prof. A.K. Bose, Vice President, Secretary, Office bearers and members of the Orissa Economics Association, Chief Patron Mr. Kishanlal Agrawal distinguished delegates and guests, Govt. officials, Media personnel, my dear students, volunteers, ladies and gentlemen.

At the outset, I would like to put on the record my deep sense of gratitude to the learned members of the Orissa Economics Association to have bestowed on me the rare honour and privilege to present the Presidential Address of Annual Conference today before the august body of distinguished participants and guests. It speaks of volumes of love and affection which they have for me as a teacher and scholar in economics for the last thirty-three years. My acquaintance with the students and teachers of economics in Orissa dates back to 1972 when I joined Orissa Education Service first at Khallikote College, Berhampur and then at Ravenshaw College, Cuttack. I would also like to convey here our deep sense of appreciation to Prof. A.K. Bose for the magnanimity he has shown in sportively accepting the proposal of Orissa Economic Association for holding the 2005 Annual Conference in this one of the oldest prestigious private college. I must appreciate the sincere effort made by my beloved student and scholar Dr. Jogasankar

Mahaprashasta and his colleagues in economics and other faculties of the college for organizing and making this conference a grand success. I am happy that Christ College is also hosting its Diamond Jubilee celebration this year at the silver city of Cuttack.

I have chosen "Dynamics of Poverty and Underdevelopment in Orissa" as the topic of my Presidential Address for two reasons – one, I started my research work on Economic Backwardness and Development of Orissa three decades ago and since then my scholars have been working on various aspects of socio-economic problems of Orissa. Two, there has been a great deal of debate recently for grant of special category status to Orissa by the centre mainly because of its persistent rural poverty, backwardness of tribal regions and ongoing financial crisis. In view of this it is necessary to address current issues of socio-economic development of Orissa in the context of the dynamic process of development and underdevelopment in Orissa.

Poverty and regional inequality are the most important problems facing our country since independence. Since the advent of five-year Indian Planning, the Centre as well as the State Government have implemented a good number of developmental and anti-poverty schemes with the avowed objectives of reducing poverty and regional inequalities in the country so that the benefits of economic growth would be fairly distributed among different sections of our society. But unfortunately all these developmental measures could not yield desired results. While there has been some reduction of poverty, the regional inequalities perpetuated between and within the States which causes serious concern to planners and statesmen. We are greatly concerned with the case of Orissa which is considered as one of the most poverty sticken states in Indian polity. Further the State is falling behind in respect of many indicators of economic development.

Some prominent historians are of the view that "through all its ages" Orissa has been politically great, economically prosperous and culturally advanced (M.N. Das, 1952; H.K. Mahatab, 1959). It is further believed that "by the end of the 19th century prosperous Orissa had become a land of poverty" (N.K. Sahu, 1964). The similar view is putforth by the planners of Orissa in 1946 by saying that "Orissa which was once a prosperous country has now to face problems of starvation, disease, ignorance and poverty" (Post-War Development Plans in Orissa, Second Draft, 1946, p.11). These comments by the historians and

planners indicate that Orissa has inherited poverty at the time of independence and at the very beginning of the five-year plans. To strike at the root of poverty the historical process of underdevelopment must be known so that effective developmental strategy can be adopted.

**Historical roots of poverty and underdevelopment**

Evidence of prosperity is found in the State during the historical past. Dantapura and Singhpura were the two famous Buddhist cities (S.N. Rajguru, 1968). Tosali, Sampa, Pithunda, Palur, Kanagar, Charitra and many others were the ancient cities (Mittal, 1962; B.S. Das, 1978). The State had numerous ports such as Tamralipti, Pithunda, Palur, Naingaina, Katikadam, Kanagar, Madaina and Charitra indicating the presence of maritime trade activities (N.K. Sahu, 1964). Tamralipti was one of the most important trading centres for many periods. During the rule of the Sailodbhanas, Orissa merchants were trading with places like Burma, Java, Sumatra, Malaya and Indonesia. Art and architecture flourished during the Bhaumas, the Kesharies and the Gangas between the 6th and 13th centuries. Industries like iron, stone carving, textile, salt, ivory and boat making were reported to have made their headway during the medieval period (A.P. Saha, 1964). In Kautilya's Arthasastra there is a mention that Kalinga was famous for quality cotton and silk fabrics and elephant. The quality cotton fabrics of Orissa found appreciation in China during the Ganga period (O.C. Ganguli, 1919). During the Mughal rule Balasore was found to be famous as a trading centre in 17th century. Its hinterland in Orissa produced quality cotton and tashar goods, salt and saltpeter, sticklac, turmeric and rice. Rice, saltpeter and cotton fabrics were exported from ports of Balasore. It was renowned dockyard where ships were built (J.N. Sarkar, 1950).

**Destructive Role of British Rule**

The industrial revolution in Europe was mainly associated with development of modern textile industry at Lancashire and iron industry at Bermingham in U.K. When industrial revolution was at making stage the import of Indian manufactured goods first into England and then into Europe was either prohibited or taxed heavily. East Indian cotton and silk stuffs were "declared to ruin the poor British manufactures". There is instance of imposing a penalty of £ 200 on all persons having or selling the quality cotton and silk fabrics made in India and China

extensive world market for her manufactured goods. Free trade was unhesitatingly imposed on India under pressure from Lancashire. The biggest blow to the Indian economy came from the 19th century when machine made cheap manufactured goods flooded the Indian market. Marx writes, "It was the British intruder who broke up the Indian handloom and destroyed the spinning wheel." It so happened that by 1846 India did not export at all, but it had to import 213.84 million yards of cloths from England (R.K. Mukherjee).

The British rule, as in case of the Indian economy, perverted in many respect the Orissan economy which is borne out by records of history. Land settlement was done in favour of the Zamindars, temple priests and other influential people (Mahatab, 1960). The exorbitant land tax which could not be paid by peasantry led to their eviction from land (B.C. Ray, 1960). Salt manufacture in Orissa decayed towards the later part of 19th century mainly on account of competition from foreign salt. Later on traditional cotton industry that flourished during the past vanished due to over flooded Indian market with cheap mill made cotton textile produced in England. The deterioration of the Orissan economy writ large on the composition of foreign trade in 1936-38 when the State imported hardware, cotton goods, coconut oil, mustard oil, gunny bags, matches, wheat flour. In exports paddy, rice, tobacco leaves and oilseeds, figured very much (J.N. Mahapatra, 1941). Thus the state kept pace with the country in becoming a raw material producing region and the state landed itself during the British rule in a State of backwardness with a new dimension of poverty where large number of weavers and artisans formed a poor class of landless agricultural labourer.

Another peculiar feature is that during the later period of the British rule Calcutta, Madras, Bombay and Ahmedabad grew as metropolis because of their being the centres of British administration and the headquarters of trading companies. The backwash effects of these centres crippled the process of growth in Orissa. Perhaps this was the main reason of 'low starting point' of Orissa at the time of the commencement of five-year plans.

**Post Independence Poverty and Development in Orissa**

After independence, Orissa actively participated in developmental

was given on development of infrastructure, key industry, productivity of agriculture and social sector. Over the period of half a century's planning there has been significant economic transformation. Orissa where modern industry was quite absent at the beginning of five-year plan has now a number of large and medium industries and a good number of irrigation and power projects. Currently IT sector is developing rapidly under the patronage of present Government in Orissa. But past glory could not be reviewed in textile sector, rather almost all the textile units are dwindling.

**Divergence in Growth**

It is noticed that in various five-year plans of Orissa the main objective of growth has been to catch up with All-India average, but the State failed to do so. Table 1 reveals that while per capita income at current prices for Orissa increased by more than 6 times during the period 1980-81 to 2000-01, the All-India per capita income increased by more than 9 times. The ratio of per capita income of Orissa to All-India per capita income was 0.777 in 1980-81 which declined to 0.518 in 2000-01. The similar trend is noticed in respect of per capita income at constant (1993-94) prices where this ratio has declined from 0.763 in 1980-81 to 0.506 in 2000-01. This clearly indicates that the divergence between per capita income of Orissa and All-India is becoming wider day by day. This divergent trend can mainly be attributed to almost stagnant primary sector which contributed about 45% to State NSDP in 1991-92 and its share was around 43% in 2000-01. On the other hand, the share of the secondary sector declined from 19% in 1991-92 to 13% in 2000-01 which indicates that the impact of globalisation has not been very much favourable to Orissa so far. It is also true that due to recent financial crisis the State is unable to mobilise sufficient resources for planned development, consequently, per capita plan expenditure in Orissa is much below compared to other developed States in Orissa.

**Magnitude of Rural Poverty**

Before we analyse the current position of rural poverty let me putforth views of some prominent economists of Orissa presented in a seminar on Approach to the Fifth Five Year Plan of Orissa in the beginning of 1973. One economist says, "It is now recognized that Orissa

"Orissa still remains the epitome of India's poverty inspite of planned economic development for the last twenty years." He further writes, "The shocking backwardness of Orissa is reinforced by non-monetary indices of development like expenditure on education, availability of medical facilities, development of basic social overheads...."

Table 2 reveals percentage of rural population below the poverty line in Orissa vis-a-vis some selected States in India. 67.3 percent rural people of Orissa were below the poverty line in 1973-74. Their proportion declined to 48 percent in 1999-2000, but the magnitude of poverty in Orissa has been the highest all along. The proportion of rural poverty in Orissa has been much higher than All-India average. Punjab (6.4%) and Andhra Pradesh (11.1%) have fared well in this regard whereas Bihar is closer to Orissa. The present position of Orissa can be summed up by saying that inspite of some decline in the magnitude of poverty the relative position of the State has not changed.

**Incidence of Rural Poverty Among Social Groups**

Poverty patterns are also related to social differentiation. Orissa has a very high share of ST population, i.e. 22.21 percent in 1991 as compared to only 8.01 percent in India, while the proportion of SC population is around the All-India average (i.e. 16.20 in Orissa and 16.33 in India). Table 3 depicts the estimates of rural poverty among social groups by Hann & Dubey (2003) which reveals that during 1999-2000 the incidence of poverty among ST population in Orissa is the highest 73.08 percent as against 33.29 percent for population other than SC and ST. 52.3% of SC households are below the poverty line as against Orissa average of 48.04 percent. The incidence of rural poverty for ST has marginally declined from 87.08% in 1983 to 73.08% in 1999-00. The decline in rural poverty is significant in case of other category and SC population. All India ST and SC population have fared better where incidence of poverty is 44.35% and 35.44% respectively. This result indicates the plight of socially deprived tribal population in Orissa which also gives a clear signal to planners of Orissa to make special and dedicated effort for tribal development. But the problem is a thorny problem and the task ahead is really difficult one.

**Regional Variation**

The National Sample Survey Organisation (NSSO) has divided

of survey. The coastal region consists of undivided districts of Balasore, Cuttack, Puri and Ganjam, the Southern comprises region Phulbani, Koraput and Kalahandi and the Northern region consists of the rest six undivided districts. The estimates of incidence of poverty presented in Table 4 reveals that the southern region is the poorest in Orissa having more than 80 percent rural people below the poverty line, whereas this proportion is around 51% for northern region and only 29.3% for the coastal region in 1999-2000. It is remarkable that in coastal Orissa rural poverty has continued to decline at a similar pace as the All-India average. These estimates suggest dramatical regional divergence of poverty in Orissa. Much of this divergence can be attributed to the concentration of tribal population. Even in northern region Keonjhar and Mayurbhanj with higher proportion of tribals appear to be the poorest having 61.92% and 68.42% rural poverty respectively.

**Human Development Index (H.D.I.)**

The HDI gives a relative measure of poverty in terms of non-monetary (education and health) and monetary (per capita income) indices. From the estimates of HDI given in Table 5 it is found that Orissa's HDI is better than only Bihar and U.P. The H.D.I. position of all other States is better than Orissa. Orissa is falling back in this regard because of poor health indices and low per capita income.

**Hunger and Public Distribution System (PDS)**

In Orissa which though self sufficient in food grain production, reports of hunger and starvation pour in regularly from southern region. The problem is not of production but of distribution. Take the case of Kalahandi which is the biggest contributor of surplus rice to the central food reserves. Between 1996 and 2001 Kalahandi provided some 50,000 tonnes of rice surplus on an average to the food reserves of Govt. of India (Sharma, 2003). The reason why people die of starvation and hunger is not because there is not enough food but because they cannot afford to purchase the food that is available. At this point PDS has important role to play to provide food security. It is disturbing to note that in high poverty states like Bihar, Orissa and Uttar Pradesh less than 5.4 percent BPL households could avail the PDS rice facilities in 1993-94. The situation was even worse in case of Bihar and Uttar Pradesh. Orissa fared well in 1999-2000 when PDS rice coverage

India average of 31.3% for their counterpart. This shows a welcome and healthy sign of development of public distribution system in Orissa. But monthly per capita purchase of food grains through PDS in Orissa has been much below compared to Andhra Pradesh, Kerala and Tamil Nadu in 1999-2000. The limitation of the operational efficiency of PDS in States with high incidence of poverty such as Bihar, Orissa and Madhya Pradesh is due to the fact that these States receive a lower share of PDS supplies probably because of their inability to purchase the stock.

**Means to Escape the Poverty Trap**

The ground reality and the analysis presented above suggest that we must strike at the weakest point of poverty, that is tribal poverty in Orissa. It is also well known that tribal economy is acting as drag on Orissan economy. The development of tribal people and tribal region is a Herculean task before the Government of Orissa. So far tribal developmental activities have been taken up by specific Government agencies like ITDA, ITDP and target oriented projects like Juanga Development Agency, Kutia Kondh Development Agency etc. Tribal sub-plan approach has also been tried, but desired results are yet to come. For any development strategy for tribal people we have to understand the specific nature of tribal eocnomy which is very much linked to forest and minerals.

**Tribes, Minerals and Forests**

There is happy or sad coincidence of tribal habitats, mineral deposits and forests in Orissa. Forest is their dwelling place, which provides 20 to 30 percent of their income in the form of collection and sale of minor forest products. Shifting cultivation is another dimension of tribal agriculture in remote forest areas. Any attempt of deforestation is going to affect them adversely. So forest policy must be conducive for tribal development.

**Exploitation of Minerals**

Orissa is rich in mineral resources. The State is endowed with varieties of mineral resources and it occupies an important position in India's mineral map. The State had 98.39% chromites, 95.11% nickel, 70.39% bauxite, 26.50% iron and 24.37% coal deposits in India during

2002-03 (Economic Survey of Orissa, 2003-04). Besides there are other valuable minerals like manganese, graphite and precious gem stones. Looking into this minerals map of Orissa one can say that any plan of Orissa's industrial development can not be meaningful without proper exploitation of existing mineral resources. In fact the prosperity of Orissa is hidden with the treasury of mines. So far the mining activities have been grossly mismanaged due to lack of proper monitoring system. It is reported that the private parties are indulged in stealing huge amount of minerals. The exploitation of minerals involves lot of environmental pollution, degradation of forests and displacement of tribal people. Similar is the case with the location of industry in tribal areas. For successful implementation of such projects we must look into the following aspects.

**Area versus People's Development**

There is conflict between area and people's development. Many micro studies related to impact of industrial development on local tribal people suggest that the tribals those were uprooted have been loser whereas outsiders have been the gainer and major players of development in tribal areas.

**Problems of Displacement and Rehabilitation**

It is found that a number of developmental projects in the State has failed to take off mainly due to strong protests by those facing displacement. Studies show that more than 20 lakh people have been displaced in Orissa since independence and majority of them are tribals. Nearly 75 percent of them have not succeeded in regaining their livelihood security. Many such projects have also created social unrest giving rise to battle field for politicians. To cope with the situation a comprehensive rehabilitation and settlement policy should be framed under close supervision of Government and stakeholders.

**Development Environment Controversy**

The development environment controversy has been the subject of debate in recent years. The mining activities generate air, water and atmospheric pollution causing a number of health hazards. The first casualty is the degradation of forests and ecology causing loss of valuable trees, medicinal herbs, loss of streams and wild animals. Further mineral resources are non-renewable, that is once lost by way of extraction is

lost forever. Therefore some amount of conservation is necessary. It is wise to make balance between present and future consumption. May be price of some minerals will increase tremendously in future. Government of Orissa will definitely be gainer to a great extent if this resource is managed properly.

**Tribal Exploitation**

It is true that the non-tribal and other elite groups operating in these areas mostly garner the benefits meant for the tribal people. Many tribal people are still exploited in commodity, product, labour and credit markets by the middlemen. One of the most important causes of the tribal poverty is due to exploitative role of the richer section of the people and other economic agents both private and government. Land alienation is another important problem to be solved. This may be one of the reasons that the Naxalites are getting sympathy of the tribal people.

**The Shattered Health and Education**

The reports are pouring day by day that the health care system in Orissa is full of utter negligence. Many health centers in tribal as well as other rural areas are running without doctors, medicines and equipment. The case of primary education is slightly better. So it is high time that proper measures to improve health and education facilities are taken to uplift the socio-economic condition of tribal and rural people of Orissa.

For efficient implementation of above mentioned and host of other relevant measures, there is urgent need for good governance, dedicated bureaucracy, strong political will and active people's involvement. Let the society awake, realize and sincerely act to the best interest of people of Orissa.

I would like to close the Presidential address with my sincere thanks to the organizers of the conference for giving me a chance to speak out my feelings and I must thank the audience for their patient hearing.

I sincerely hope that the subsequent technical sessions will be fruitful and meaningful with new ideas for policy makers.

Thanking you all.

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## TABLE – 1

### Per Capita Income of Orissa and India at Constant and Current Prices

(in Rs.)

| Year | At 1993-94 Prices | | | At Current Prices | | |
|---|---|---|---|---|---|---|
| | Per Capita Income Orissa | | Orissa/ All India All-India | Per Capita Income Orissa | | Orissa/ All India All-India |
| | (NSDP) | (NNP) | (NSDP) | (NNP) | | |
| 1980-81 | 4085 | 5352 | 0.763 | 1352 | 1741 | 0.777 |
| 1981-82 | 4010 | 5555 | 0.722 | 1485 | 1985 | 0.748 |
| 1982-83 | 3703 | 5555 | 0.667 | 1544 | 2143 | 0.720 |
| 1983-84 | 4374 | 5854 | 0.747 | 1957 | 2464 | 0.794 |
| 1984-85 | 4091 | 5956 | 0.687 | 1899 | 2690 | 0.706 |
| 1985-86 | 4483 | 6082 | 0.737 | 2238 | 2932 | 0.763 |
| 1986-87 | 4464 | 6189 | 0.721 | 2382 | 3191 | 0.746 |
| 1987-88 | 4244 | 6260 | 0.678 | 2375 | 3546 | 0.670 |
| 1988-89 | 5046 | 6777 | 0.745 | 2954 | 4153 | 0.711 |
| 1989-90 | 5282 | 7087 | 0.745 | 3311 | 4693 | 0.706 |
| 1990-91 | 4300 | 7321 | 0.587 | 3166 | 5365 | 0.590 |
| 1991-92 | 4757 | 7212 | 0.660 | 4020 | 6012 | 0.669 |
| 1992-93 | 4589 | 7433 | 0.617 | 4233 | 6732 | 0.629 |
| 1993-94 | 4797 | 7690 | 0.624 | 4797 | 7690 | 0.624 |
| 1994-95 | 4913 | 8070 | 0.609 | 5688 | 8857 | 0.637 |
| 1995-96 | 5050 | 8489 | 0.595 | 6806 | 10149 | 0.671 |
| 1996-97 | 4652 | 9007 | 0.516 | 6401 | 11564 | 0.554 |
| 1997-98 | 5272 | 9242 | 0.570 | 7831 | 12707 | 0.616 |
| 1998-99 | 5165 | 9647 | 0.535 | 8324 | 14395 | 0.578 |
| 1999-00 | 5265 | 10067 | 0.523 | 8733 | 15562 | 0.561 |
| 2000-01 | 5187 | 10254 | 0.506 | 8547 | 16487 | 0.518 |

*Source : Central Statistical Organisation (F.No. U-11017/2/2002-NAD-8)*

## TABLE – 2

### Percentage of Rural Population Below the Poverty Line by Selected States in India

| States | 1973-74 | 1987-88 | 1999-2000 |
|---|---|---|---|
| Andhra Pradesh | 48.4 | 20.9 | 1.1 |
| Bihar | 63.0 | 52.6 | 44.3 |
| Madhya Pradesh | 62.7 | 41.9 | 37.1 |
| Orissa | 67.3 | 57.6 | 48.0 |
| Punjab | 28.2 | 12.6 | 6.4 |
| All India | 56.4 | 39.1 | 27.1 |

*Source : NCDS, Orissa Development Report, 2002, Planning Commission, Govt. of India*

## TABLE – 3

### Incidence of Rural Poverty by Social Group 1983 to 1999-00

| Social Group; | BPL | % of Rural Population | | |
|---|---|---|---|---|
| Orissa | 1983 | 1987/88 | 1993/94 | 1999/00 |
| ST | 87.08 | 83.82 | 71.31 | 73.08 |
| SC | 75.99 | 65.75 | 49.79 | 52.30 |
| Others | 58.32 | 47.31 | 40.18 | 33.29 |
| All groups | 68.43 | 58.62 | 49.79 | 48.04 |
| All India | | | | |
| ST | 63.89 | 56.31 | 47.05 | 44.35 |
| SC | 58.96 | 50.79 | 48.27 | 35.44 |
| Others | 40.90 | 33.80 | 31.20 | 21.14 |
| All groups | 46.51 | 39.36 | 37.28 | 26.50 |

**TABLE – 4**

**Regional Poverty Incidence in Rural Orissa (%)**

| Year | Coastal | Southern | Northern | Orissa |
|---|---|---|---|---|
| 1983 | 57.97 | 80.76 | 75.22 | 68.43 |
| 1987-88 | 48.37 | 82.98 | 61.01 | 57.62 |
| 1999-00 | 29.30 | 86.16 | 50.98 | 48.00 |

*Source : Hann & Dubey, 2003*

**TABLE – 5**

**Human Development Index of Major States in 2000**

| H.D.I. | States |
|---|---|
| High H.D.I. | Maharastra (83.42), Punjab (79.42), Haryana (78.10), Gujarat (77.32), Tamilnadu (76.64), Kerala (74.09), Karnatak (73.88) |
| Medium H.D.I. | West Bengal (68.67), Andhra Pradesh (68.53), Rajasthan (66.89), Madhya Pradesh (63.98), Assam (63.83), Orissa (61.74) |
| Low H.D.I. | Uttar Pradesh (54.23), Bihar (46.09) |

**Note :** Estimates using revised weighted average index.

**TABLE – 6**

**Percentage of Households Purchasing Rice From PDS, 1993-94 and 1999-2000 in Rural Areas**

| State | 1993-94 | | | 1999-2000 | | |
|---|---|---|---|---|---|---|
| | BPL | APL | AII | BPL | APL | AII |
| A.P. | 77.7 | 59.8 | 62.1 | 74.7 | 61.5 | 62.6 |
| Bihar | 0.4 | 0.4 | 0.4 | 5.6 | 4.2 | 4.7 |
| M.P. | 9.4 | 6.0 | 7.3 | 20.3 | 12.4 | 15.1 |
| Tamilnadu | 76.9 | 61.4 | 65.9 | 83.4 | 72.6 | 74.5 |
| U.P. | 2.1 | 3.2 | 2.8 | 11.1 | 6.5 | 7.7 |
| Orissa | 5.3 | 2.4 | 3.7 | 59.2 | 42.1 | 49.8 |
| All India | 20.0 | 25.0 | 23.3 | 31.3 | 31.0 | 31.0 |

MANGARAJ MEMORIAL LECTURE

# Economic Development and Social Ethics

**Professor Baidyanath Misra**

## CHANGE IN ECONOMIC CONTOUR

Since the beginning of fifties, we have been trying to increase the pace of economic development through an organised effort of planning. Not that we have not achieved anything. There are several areas where there have been steady progress. It is not necessary to make a quantitative analysis of the progress achieved on different fields. In many fields change is visible and there is a psychological impact on change. All the same there are many areas where our efforts are far from satisfactory. We are still struggling to abolish poverty, unemployment and inequality: the major economic maladies that raise their ugly heads inspite of different measures designed in different plans to tackle these maladies. Planning for economic development has, therefore, to be continued, continued in a more systematic and well designed method so as to effectively utilise the potential resources available to the community to tackle these maladies, raise the living standards of the people and open out new opportunities for a richer and more varied life.

## BIG GAP BETWEEN OUTLAY AND OUTPUT:

Another area which needs emphasis is effective implementation of the programmes that are launched to increase the pace of development. As the Finance Minister in his budget speech of 2005-06 has pointed out, there is a big gap between outlay and output. We think this is one of the major stumbling blocks in the attainment of desired progress. There are several fields in which remedial action can be taken

planning is proliferation of a number of projects without adequate funds to complete them in time. It is often seen that a project which is supposed to complete within a period of 5 or 6 years takes almost 20 years for completion with escalation of costs to the extent of 12 or 15 times. Therefore, it is necessary to select a few 'important projects on priority basis and provide the required amount of funds for their completion on time.

Second, it is also seen that in many of the anti-poverty programmes, quite a substantial amount of funds is siphoned off by the agencies, which are entrusted with the job of implementing such programmes. Two things can be done here to avoid leakage of such funds. If the local authorities are entrusted with the responsibility in organising such activities, there will be better transparency in sanctioned amount of funds and the process of implementation. This will prevent leakage to some extent. Further very often many infructuous programmes are taken up which do not assist the poor nor provide them with any productive assets which can help them to maintain their livelihood without further aid. If the projects are selected in consonance with the wishes and ability of the poor, it will go a long way in increasing the worthwhileness of the projects. Finally there is need for monitoring such programmes by some outside agencies whose credibility is more or less recognised by most of the people. Many other suggestions can be given, but atleast if these few precautions are taken, we can improve efficiency, economy and effectiveness to a great extent.

## INTEGRATION BETWEEN ECONOMIC DEVELOPMENTAND SOCIAL WELL BEING

While considering the problem of economic development, we have to consider the broader social environment that is a part and parcel of economic development. The development of resources should not be viewed in a narrow technical sense, but in the sense of improvement of human faculties and the building of an institutional framework, as mentioned in the very first plan, adequate to fulfil the needs and aspirations of people and at the same time preserve the natural ecosystems for the physical and psychological well being of people.

Economists have produced a large literature on how to increase growth, but like the sorcerer's apprentice, have not considered the need to stop the process at some point where it is necessary, (Herman Daly). Yet, by a short chain of reasoning from the laws of diminishing returns and diminishing marginal utility, it is clear that growth in physical commodities and in population will eventually begin to cost more than either is worth. The relevant challenge is not to torture the nature by attempting the impossible task of perpetual growth, but rather to learn how to maintain the highest level of living that can be universally shared and ecologically sustained over the long run.

All this means we should not like Alice and Red Queen in 'Alice in Wonderland', keep on circulating without any particular direction. According to them "It does not matter where we are going so long as we get there quickly". Such purposeless travel does not sustain the society nor improve the quality of life. There are many options which are available to maintain a steady-state economy without sacrificing social and human values and preserving ecological balance. We limit our analysis to five guidelines which we consider most important in the process of change. These guidelines are:

(i) Restoration of Social Values in Economics

(ii) Improvement in the Quality of Institutions

(iii) Sustainable Development

(iv) Empowerment of the People and

(v) Improvement in Quality of Life

**1. Restoration of Social Values in Economic Development**

India's economic development is attributed to the high degree of mistrust and dishonesty, erosion of values (Fleix Raj). According to a Transparency International (TI) Survey (2004), the corruption level in India is 91 in the list of 146 countries. India stands out as one among 30 most corrupt countries in the world. The Black Economy is estimated to be about 40 percent of the GDP which is worth Rs.12 lakh crores today. The economic change has produced such an adverse effect on social values that one cannot secure any facility from the government

without making any payment in bribe. It is now called speed money. TI has found out that Indians pay a whopping Rs.267 billion in bribes (2003) annually with the health sector perceived to be the most corrupt with people being made to pay for what they are entitled to.

The politicians, bureaucrats and governments in India are involved in scams and scandals. The 1990s has been a decade of scams – bofors, the bank securities scam, the hawala scam, the animal husbandry scam, the sugar scam, telecom scam, fertilizer import scam, PSE disinvestment scam, etc. In fact, corruption has now become a part of life. If some how, you are caught, you can get rid of the crime by paying a bribe. On the one side, since corruption manifests itself at the highest political level, others do not hesitate to secure some ill-got money. And further, our legal system has made life too easy for criminals and too difficult for law abiding citizens. A touch here and a push there, and India may become ungovernable under the present constitutional set up (Nani A Palkhivala).

The alarming rise in the incidence of corruption and crime has also an important economic aspect. Even though India has not yet attained a take off stage in the process of development, there is a tendency on the part of the influential to strive for acquisitiveness leading to disruption of social values. Globalization has greatly contributed to the pursuit of materialism to such an extent that inspite of colossal poverty, unemployment and inequality, our young men, who are supposed to be motivated by certain ideals, are making reckless effort to live a life of luxury without caring for any traditional social norm. And Jean Dreze in Time Magazine writes, "The so-called middle class in India (read the upper class) has become rich beyond its members' wildest dreams. They have literally translated themselves to the 'First World' without applying for Visa".

A time has come when we should try to restore social values in the process of development which result in a strong human bond by creating some effective public institutions that restore higher

degrees of trust, honesty, accountability and transparency. Such a change will save the country from dishonour and disgrace. Civilization is an act of the spirit and the promotion of that spirit can control the banality of evil and improve public good'.

**2. Improvement in the Quality of Institutions**

We have already pointed out that there is a big gap between outlay and output. Different governments (Centre and States) have established a number of institutions to implement different programmes of development. We have already mentioned some of the leakages that take place in the implementation of these programmes. The quality of these institutions can be known when we consider their impact on development.

H. G. Wells has observed that human history is becoming more and more a race between education and catastrophe. This shows the importance of education. That is why in the common minimum programme, it is emphasised that about 6 per cent of GDP should be allotted to education. But nobody bothers how the money allotted to education is utilised. We have a wonderful institution called Sarva Shiksha Abhiyan. Last year the Central Government allotted Rs.3057 crore to the Centre. This year the amount has increased to Rs.4754 crore. In a recent speech, the Prime Minister Dr. Manmohan Singh deplored the fact that the drop out rate under the scheme was over 50%. A survey by Pratichi in West Bengal showed that barely 7% of children could write their own names after five years of schooling. The PROBE report revealed massive absenteeism in government schools.

India spends 4.1% of GDP on education, but the literacy rate is only 65%. China spends only 2.2% of GDP on education and the literacy rate there is 91%. Similarly Sri Lanka and Indonesia spend only 1.3% of GDP on education, and the literacy rate in these two countries come to 92.5% and 88% respectively. Even developed countries like UK and US spend only 4.4% and 4.9% of GDP respectively on public education and the literacy rate is almost 100% in these two countries. What is more distressing is that though public spending per student is 20.8% of per capita income in India, as high as in the US and much higher than in

the UK (15.8%), China (11.56%), Sri Lanka (6.1%) or Indonesia (6%), the literacy rate is so low in India. The important point we have to notice here is that the institutions that have been created to deliver important services do not have any commitment to improve the quality of education.

Take another example. The budget increases the allocation for the National Rural Employment Guarantee Scheme from Rs.4020 crore last year to Rs.11000 crore during the current year (2005-06 Budget). Rajiv Gandhi had estimated that only 15 paise in the rupee got through to the poor. Economists like Dr. Mahendra Dev and Ajit Ranade put it at 21 paise in the rupee. This shows the amount of waste in poverty alleviation programmes. NSSO surveys give us rural poverty ratios for different periods. These surveys show that there is little connection between rural employment schemes and poverty. Very often bogus claims are made that rural employment schemes build durable assets that increase rural prosperity. If so, decades of rural employment schemes should have provided a pucca road, school building and health clinic in every village. We know the deplorable condition of all these assets.

The Union Budget (2005-06) increases the allocation for Integrated Child Development Services from Rs.1623 crore to Rs.3142 crore, and talks of providing one anganwadi in every village. That sounds wonderful, but a survey by Sukhatme and others showed that one third of anganwadis do not function at all, one-third function only part of every month and just one-third function fully. What will be the benefit of additional anganwadis if the existing ones do not serve their purpose.

We all emphasise the importance of public distribution system. The system is strengthened from time to time with special emphasis on the Antodaya scheme. Yet one study of Eastern UP by Kripa Shankar (EPW 2004) shows such high leakage in the public distribution system that it takes Rs.20 of government spending to get Rs.1 to the poor. A UNDP study in the same UP found that there were no sales to BPL families in three out of four villages studied. Estimates of diversion to the open market range from 40-83% (Ahluwalia, 1993). A study based on NSS data (Parikh 1994) suggests that in UP 98% of rural households make

We do not go on multiplying examples. All that we want to emphasise is that the institutions which have been created to serve the people must do their duty. If these institutions are inefficient and ineffective and follow corrupt practices with impunity, economic development cannot help any social purpose.

### 3. Sustainable Development

The World Commission on Environment and Development in 'Our Common Future' defines sustainable development as development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. It contains within it two key concepts :

(i) The concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given. These needs include a secure and adequate source of income, adequate shelter, health, education, security and amenities.

(ii) The idea of limitation imposed by the state of technology and social organisation on the environment's ability to meet present and future needs. That is, a minimum sustainable development must not endanger the natural systems that support life on Earth. The atmosphere, the water, the soils and the living beings. This implies that economic development should not cross the limits of the carrying capacity of our planet.

These two concepts imply that sustainable development involves more than growth. It requires a change in the content of growth, to make it less material and energy intensive and more equitable in its impact. These changes are required in all countries as part of a package of measures to maintain the stock of ecological capital, to improve the distribution of income and to reduce the degree of vulnerability to economic crisis. 'Our Common Future' hence emphasises that, "In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs

Such sustainable development has greater relevance now since the present pattern of development has started destroying the life support system both for the present and future generations. As a result of reckless exploitation of earth due to indiscriminate industrialisation and agricultural development we have come to a stage where there is rise in emission of toxic gases, depletion of ozone layer, threat of acid rain, pollution of air, water and land surface etc. in fact nothing is spared resulting in total pollution. The increase in chemical industries and application of chemical fertilizer, pesticides and insecticides in agriculture are causing the depletion of ozone layer which acts as a blanket of earth to filter out the harmful rays of the sun causing a great danger to the humanity. If the ultraviolet rays of the sun reach earth, there will be incidence of skin cancer, increase in temperature of earth which could melt polar ice-cap (already started). The climate change is so severe now that the scientists are worried how to reduce green house gas (GHG) emissions.

The Kyoto mission is now busy in preparing a programme to tackle environmental degradation and preserve the life support system. At least in our country we should try to adopt a few important measures like (a) population control, (b) environmentally sustainable technology, (c) improvement of awareness among the people through sustained education and health programmes, (d) prevent consumerism and (e) involvement of people to promote eco-friendly development. If a sustained effort is made to achieve the above guidelines, we may succeed to some extent to restore the past ecological damage and insulate the country from the damage as a consequence of future development.

## 4. Empowerment of People

One of the major concerns that has been agitating the minds of social scientists is the failure of the development strategy in reducing poverty and improving the quality of life of most of the people in the country. The strategy of development which has

prosperity. It is a cumulative process, which is supposed to bring out a continuous improvement in the process of change, both physical and human, increasing the gains of real development and providing facilities for percolating such gains to the poorest of the poor. As we have already said we have made quite a lot of progress in different fields. But because of political and administrative hurdles, our progress has not been as good as it should be.

In 'Emerging Concerns in Development Administration' we have discussed in great detail the characteristics of political and bureaucratic system in India. Instead of repeating all these, we can only highlight a few important points for illustration. It is acknowledged by most of the sensitive citizens in India that the country's democratic polity has deepened the class schism. As Justice P.B. Sawant remarks in a judgement, the ruling elite seems oblivious of the elegance of the concept of social and economic democracy. Instead, those in power are interested in perpetuating social and economic inequalities for their benefit. Beyond the right to vote and the right to contest elections, political democracy confers no other right on citizens. In the absence of social and economic democracy, even the rights to elect and get elected remain on paper for a majority of people. And further with growing social and economic inequalities, the right to vote itself may be manipulated while the right to contest polls has become the preserve of a wealthy few.

What is worse and dangerous is the theory going round that corruption needs to be condoned to some extent as elections involve huge expenditure. People must realise that they cannot and should not expect anything in return – apart from what they may share with others as citizens — for voting for a person. In such a democratic set up, the country's public life can hardly be clean and safe. Referring to politicians, justice Sawant remarks, "It appears that for the last some decades now, a tribe is growing fast which looks upon public office as a source of pelf and power".

What Justice Sawant says with regard to politicians, the same trend

office as a source of pelf and power. Three important characteristics are visible in the administrative culture of India and these are: (i) rigid hierarchical structure with concentration of power at higher levels, (ii) increased level of regulation and (iii) impersonal way of operation and rigidity in adhering to formal rules and regulations. Bhambhri in his 'Bureaucracy in India' goes further and points out that senior bureaucrats have forged an alliance with politicians not only to brighten their own career prospects but also to articulate political views and gain a greater share of social resources. It has been commented by many political commentators that there is close collaboration among politicians, bureaucrats and businessmen in India during the planning era to enable politicians to keep their chair, administrators their power and businessmen their money through licences and permits.

All this implies that we have to change the administrative culture to make it more responsive to the people's needs. If the ultimate aim of development is to enhance the quality of life of people, as Prof. Amartya Sen observes, economic growth should be helped by the friendliness of the economic climate rather than by the harshness of the political system and arrogance of bureaucratic culture. Many suggestions can be given to improve the character of development. But we emphasise one aspect which is considered to be the most important to improve the quality of administration. At present, there are too many levels of decision making, adding to delay but not necessarily to the quality of decision making. Over-centralisation in decision making weakens the process of coordination. It is now recognised by planners that developmental activities undertaken with the people's active participation have a greater chance of success and can also be more cost-effective as compared to the developmental activities undertaken by the government where people become passive observers. Further, a participatory planning process is an essential pre-condition for ensuring equity as well as accelerating the rate of growth of the economy. It is therefore, necessary to empower the Panchayati Raj Institutions by transferring to them both functions and resources. A time has come when the PRIs must become the cutting edge of our three-tier political structure and the focal point of democratic decentralization.

### 5. Improvement in Productive Capacity and Quality of Life

The most pressing problem in development pattern of the country is not only to increase the rate of growth of income, but at the same time provide opportunity to each and every Indian to realize his or her full creative potential and improve his or her economic well being. It has been mentioned in the Tenth Plan that the development process must be viewed in terms of the efficiency with which it uses an economy's productive capacities, involving both physical and human resources, to attain the desired economic and social ends and not just material attainment. In view of these two overriding objectives, we emphasise three important areas that need greater attention. They are : (a) Agricultural Development, (b) Improvement in Infrastructure and (c) Acceleration of Social Sector.

Agriculture is the mainstay of the Indian economy. Though about 60% of the labour force is working in agriculture, 70 percent of the population is dependent on agriculture for their livelihood. But the annual growth rate of agriculture has been terribly erratic. While it was 3.2 percent in the Seventh Plan, it came down to 2.1 percent in the Ninth Plan. In 2004-05, the growth rate comes to 1.1 percent while the overall GDP growth rate for the country is estimated to be 6.9 percent. Of the total GDP, the share of agriculture comes to about 20.5 percent. We cannot reduce poverty, unemployment or underemployment in rural areas unless there is improvement in the productivity of agriculture, diversification of cropping pattern and higher investment in agriculture to increase irrigation facility, create water harvesting structures and develop environment– friendly agricultural technology which can be applied by small and marginal farmers without much cost. Agricultural development must be viewed as a core element of the Plan, since growth in this sector is likely to lead to the widest spread of benefits especially to the rural poor.

In addition there is also need to develop rural infrastructure so as to start a large number of agro-based industries in the rural areas. This will reduce the pressure of population on agriculture by diverting some surplus population from agriculture to these industries. Further, there

will be scope to effectively utilise the by-products of agriculture in these industries. A number of recent studies have indicated that the rate of growth of rural incomes and reduction in rural poverty are strongly influenced by the provision of rural road connectivity. In addition agricultural productivity requires other forms of rural infrastructure like irrigation, power, credit, transport facilities etc. In fact, development of infrastructure is an essential prerequisite for economic development of any country. As has been pointed out by Dr. V.K.R.V. Rao, "The link between infrastructure and development is not a once for all affair. It is a continuous process and progress in development has to be preceded, accompanied and followed by progress in infrastructure, if we are to fulfil our declared objectives of self-accelerating process of economic development".

Finally to improve the quality of life we should make more investment in social sectors like education, health, sanitation, social security etc. which will provide the basis for equity, efficiency and sustainability of economic well being. Education is a training of mind which provides the right kind of leadership for social and economic improvement. Improvement in health will improve the capability of one to stand the strains of life, Provision of social security will enable the poor and destitute to lead a life of decency and dignity. In sum, improvement in social sector increases Human Development Index (HDI) which is aimed at increasing the people's skills and capacities and widening their choices to live a long and healthy life and effectively participate in the process of economic development and promote social values.

Economics should not be viewed only for increasing the material standard of living of the individuals, but as a means to establish higher social values. As Gandhiji said, 'I do not draw any sharp distinction between economics and ethics. Economics that hurts the moral well being of any individual or nation are immoral and therefore, harmful'. In fact, India needs an economic system based on self respect which must fulfil certain basic human values. And these human values imply simple rules of conduct and action for living together, that is, social living for mutual benefit.

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# Economics of Value Added Tax

# Value Added Tax in India

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## INTRODUCTION

It was Chanakya who first wrote that a government should tax its people like a shepherd shears his flock or a bee gets nectar from a flower. But, apparently that fiscal wisdom died with him. The modern Indian state has taxed its people like the French get perfume from flowers - by the time they are through, nothing much of the flower remains. Similarly, right from the prohibitive peak income tax rate of 97.5% in the heyday of state control to the current system of state taxes, the formula is a familiar one: by the time the state is through with the tax-payer, nothing much was left of him. Over the years, this suffocating system of taxation has spawned a black economy that is by many estimates half as big as the white one. Alongside, the revenue collection mechanism of the state was also totally corrupted. Post-liberalization efforts to fix this mess have only been marginally successful and a lot remains to be done. A new system of taxation, based on the principle of value addition, is scheduled to take effect in April 2005. It will undoubtedly rank among the biggest events on India's Economic Calender this year and the biggest overhaul of the tax system in half a century. Starting April-1, the country will take a first step towards becoming a single market for everything from cars to soap.

Now many questions come to mind in this context. What is a VAT and what kind of taxes it replaces? Is introduction of VAT justified in India? What are the recommendations of Jha Committee on V.A.T.? Whether the states will gain or lose after its implementation? These the issues which are likely to be discussed in this paper.

## V.A.T.- The Concept and its Meaning

V.A.T. or Value Added Tax is the newest form of consumption taxation and is suggested as an alternative to sales taxation. The tax had its origin in a report known as "Tax Reform in Japan" submitted by Carl C. Shoup in 1949 as a substitute of corporation tax.

The tax was tried in Michigan state of the United States in 1963 in the name of Business Activities Tax. France was the first country to impose the tax in 1954. The Govt. of England finally adopted it in 1973. Many Latin American and African countries have also adopted this tax. Now, this tax is used in 125 countries of the world.

The Value Added Tax (V.A.T) as its name implies, is a tax on the value added to a commodity or service. It means that the value added tax is imposed on the value that business firm adds to the goods and services that it purchases from other firms. It also adds value by processing or handling these purchased goods with its own labour force or machinery, building or other firms.

Value Added is defined as the total value of output minus the value of purchased material inputs. The tax base of V.A.T. is the difference between sale proceeds minus the cost of the inputs which the producer purchased before production. To illustrate, a producer purchased material inputs, intermediate goods, machines, equipment, services of banking, insurance and advertisement and produced a particular commodity. Now after the commodity or service has been produced its price is fixed by the producer, then the difference between the price- fixed and the price paid to the inputs is the value which has been added. That difference will be the basis of taxation of VAT say 12.5 percent. From the producer the commodity passes to the wholesaler. He also adds certain value. Here the price he sells and price he pays is the value added and the tax is imposed on it. Finally, the commodity from the wholesaler, goes to the retailers. He also adds some value i.e. the difference between wholesale price and retail price and as such the tax is imposed on it. One good or commodity will be subject to as many taxes levied as the number of transactions through which it passes. The important point here to remember is that VAT is a tax on value added and there will be

**VAT in White Paper in India**

The new VAT regime as per the white paper, expected to be in place across all states, will have two basic rates of 4 percent and 12.5 percent for 530 items. There will also be a specific category of tax exempted goods and a special VAT rate " of 1 percent for gold and silver ornaments and so on. According to the white paper, there will be at most 46 commodities in the list of exempt goods-natural and unprocessed products in the unorganised sector, products legally barred from taxation, and products that have social implications. Included in this category is a set of maximum of 10 commodities, flexibly chosen by individual states from a list of goods (finalized by the Empowered Committee) that have social importance for individual states and have no interstate implications. The rest of the commodities in the list will be common for all states. The plan also entails that under the 4 percent VAT rate category, there will be the largest number of goods (265) comprising of items of basic necessities such as medicines and drugs, all agricultural and industrial inputs, capital goods and declared goods. The remaining commodities, common for all states, will fall under the general VAT rate of 12.5 per cent.

The penal provisions in the VAT bills will not be more stringent than in the existing Sales Tax Act, according to plan. And, in general, all goods will be covered under VAT and will get the benefit of input tax credit. The few goods which will be outside VAT-liquor, lottery tickets, petrol and other fuels will continue to be taxed under the Sales Tax Act and with uniform floor rates decided by the Empowered Committee.

In terms of phasing out other taxes under the VAT regime, the note has some ambiguity. It states that while other existing taxes like turnover tax, surcharge, additional surcharge and special additional tax will be abolished, if states have already introduced entry tax and intend to continue with this tax, then they should be made vatable. However, this will not apply to entry tax that may be levied in lieu of octroi. Central Sales Tax, the tax on interstate sales, will stay for the present and will be phased out to pave the way for a destination VAT at the state level. So, it doesn't purport to be a full fledged destination type VAT that has been the model for domestic trade tax reform across the

world, but the design of VAT outlined in the white paper incorporates some of the basic features of a consumption VAT.

**Jha Committee on VAT**

The Govt. of India appointed Indirect Taxation Committee under the Chairmanship of L.K. Jha, an eminent economic administrator of the Country, in 1976 which is popularly known as Jha Committee on Indirect Tax in India.

It is now an agreed view that it is not enough to remove the weakness of each individual indirect tax for removing the weakness of Indirect Tax System as a whole. In order to mitigate the problem of cascading i.e. ill effects of indirect taxes, and minimize the overlap of excise duties and sale taxes, the Jha Committee suggested that there ought to be lowering of excise levies on one hand and on the other, restrictions could be imposed on the power of the state govt. to levy sales taxes so as to ensure that there is no undue increase in the cost of production and that each state essentially taxes its own residents without jeopardizing national priorities.

The Committee believes that these changes would only initiate the process of reform, but should not be capable of bringing about a marked improvement in existing system. They could go a part of the way. If the objective is to eliminate or reduce to negligible proportions of cascading and distortions in factor prices caused by imports, excise and sales taxation, it can be achieved only if long term changes are made in the system of indirect taxation with generalized set off for taxation of inputs. It is in this context that the need of value added tax system has been realized by the Jha Committee. VAT may remove the defects of excise, sales taxation and octroi.

It would also be consistent with the often expressed desire of trade and industry to deal with a single tax authority in the field of, indirect taxes, which, in turn, is at the root of the demand for merger of sales taxes with excises. Obviously, VAT has some attraction to India where the structure of commodity taxation has been too much complicated and where multiple taxation is a major evil.

But, realizing the revenue, constitutional and administrative problems, the committee concluded that it would be premature now to

think in terms of a comprehensive system of a Value Added Tax extending to the retail level. However, the committee observed that a satisfactory solution to the system of excise taxation lies in the adoption of MANVAT i.e. Value Added Tax system at the manufacturing level.

**Rationale for Introducing VAT in India**

Ever tried selling matches made in Tamilnadu in Uttar Pradesh? If you haven't, stay clear; it is not a very appealing proposition. First you will have to buy matches from your counterpart in Tamilnadu, paying Central Sales Tax (CST) to the government there. The CST is a state-of -origin tax, payable to the state in which the goods originate in an interstate sale. Next you must ship the matches across 2000 kilometers to UP, pay an entry tax to the state of UP and follow it up with a 10% local sales tax (LST) to the same government when you sell it. In addition, you may pay octroi to the municipality or tehbazari to the panchayat where you sell the matches. If you sell items that attract surcharges or luxury taxes, then you'll have to pay even more agencies than the three or four applicable to matches.

There are three problems with this system. One, we have a mixture of origin taxes (the CST) and destination taxes. This combination leads to double taxation of a single transaction, which inhibits inter-state commerce. As a result India, despite being one large nation, is in fact a fractured market. Every inefficient producer in the country is protected from his rivals from other states by the sum of state of origin and entry taxes, which can go up to 11% in certain categories. Consumers like you and I must bear the higher costs, as a result.

Secondly, a direct and very significant offshoot of this fractured market is extended transit times and increased inventory holding by companies. In the example of the matches being sold in UP, the lorry carrying the goods would have to pass through Tamilnadu, Andhra Pradesh, Maharashtra, Madhya Pradesh and Uttar Pradesh. At each state border it would have to wait for inspectors to clear paper work and ascertain if any tax is payable indeed, in the transit states, the inspectors only verify that no tax is payable ! Often this takes days, if not weeks. These stoppages lead to enhanced working capital outlays by companies and reduced profitability.

A third problem is that since that taxes are levied on the selling price, you will pay tax on all the other taxes paid previously. i.e. the CST paid to Tamilnadu also attracts a sales tax in UP; this is referred to as "cascading of taxes". This cascading is worsened by the fact that although entry taxes, LST, luxury tax and octroi all flow to the same government they are levied sequentially, each being layered upon all its predecessors. This has distorted the policies of nearly all companies in India. State boundaries, rather than logistical efficiencies, guide their redistribution strategies. A firm which would be well served with a single godown in Delhi to serve all of Haryana, Western UP and Delhi, would instead open one godown in each of the three states, and ship goods through intracompany transfers between them. The first "Sale" happens in the state of consumption, and the CST applicable on interstate sales is avoided. Not only did this lead to greater costs and lower efficiencies, worse still interstate smuggling became a big business.

Not so long ago when a car maker bought steel he paid excise for the steel, and later paid excise from the car as well, in effect paying excise not only on the finished product, but also on the excise paid for the steel. Since excise is a heavy tax, its cascade has an even more disastrous impact on business policy. Every rupee saved in taxes adds back to corporate profits; so a large section of companies went about buying their inputs without invoices, and hence without excise being paid. Some others were tempted to integrate backwards; they would simply make the steel as well as the car avoiding the need for any transaction to account for the inputs. So what if you weren't in the business of making steel, and did a pathetic job doing it; the tax saving would more than make up for the inefficiency losses. It is in this context that the need of Value Added Tax system has been realised by the Jha Committee.

Somewhere in the mid 1980s, the government of India discovered Value Added Taxation. Here every stage in the process from production to consumption is taxed only to the tune of the value added by that stage. So a car maker paid tax only to the extent of value added by him, i.e. converting steel to automobiles. He could simply document using an invoice-his purchase of the steel from the steel maker, and claim to be exempt from paying excise for that input. The paper trail generated by such invoicing whitened a large part of the industrial economy.

Starting in 1986, India moved from an excise regime to a Modified Value Added Tax (MODVAT) and now to a Central Value Added Tax (CENVAT) regime. Thus, some form of Value Added Taxation already exists in India.

The white paper (WP) on state-level Value Added Tax (VAT) brought out by the Empowered Committee (EC) of state finance ministers marks the culmination of the initiative taken by Manmohan Singh as Union finance minister in 1993 to induce state governments to scrap their sales taxes and replace them with a VAT regime. The sales tax systems that had evolved over the years were grievously flawed and constituted a drag on the growth of the competitive economy. While the case for reform was clear, it has taken 10 long years for the states to go along with the centre. Decisions to initiate steps towards VAT in the states were taken only in November 1999. That was at a meeting of state chief ministers convened by the then union finance minister Yashwant Sinha. The EC was formed to help implement the decisions. Target dates were subsequently set for ushering in the new regime. After two misses, the date set this time, April 1, 2005 seems to be firmly in sight

**Working of the VAT in India**

Value added taxation creates an incentive for each participant in the chain from production to sale to clearly identify his role, because he is only taxable for playing that role. A trader at the end of a month or quarter needs to produce all his purchase invoices and all the sale invoices. He gets a tax credit for all his purchases (since those are goods and services for which their producers have already been taxed), and is liable for taxation only on the difference between his purchase and sales invoices. This does away with waiting at state boundaries for a tax inspector to decide whether tax has to be paid.

Also, in a ideal VAT, the 'destination principle' is applicable. Taxes are payable to the states where the goods are headed, and in those states, you get credit for the taxes paid previously, even to other states. So if you make an invoiced and above-board purchase, then it is in your interest that you make an invoiced and above-board sale as well. If the government manages to ensure that the first point of sale is invoiced

transactions. This is an important gain of the VAT system. VAT is collected across all points of sale; therefore if one person evades taxes the loss to the Treasury is only to the tune of his value addition. In the current system, since sales taxes are collected at a single point, evasion at that point costs the government all of the tax. By reducing the attractiveness of tax avoidance, the VAT can potentially increase tax revenues.

Perhaps the biggest benefit of VAT is that it could unite India into a large common market. This will translate to better business policy. Companies can start optimizing purely on logistics of their operations, and not based on tax-minimization. Lorries need not wait at checkpoints for days; they can zoom down our highways to their destinations. Reduced transit times and lower inventory levels will boost corporate earnings.

In the late 1990s, many states, strapped as they were for cash, decided to embrace the VAT's promise of increasing revenues, and decided to move to VAT in lieu of sales taxes. A lot of not-so-subtle prodding by the centre also helped. But the transition has also been slow and incomplete because of strong opposition from some quarters. Many traders and some state governments are crying, hoarse over it, and even some sections of the general public aren't exactly enthusiastic. There are three main reasons for this.

Not all the states in India are the same. We have two types of states— the high production and high consumption ones like Gujarat and Maharashtra; and others like Utter Pradesh and Bihar where products are consumed, but production levels are relatively low. Under the current system of taxation, most of the taxes are collected at the last point (i.e. when the consumer purchases the product) so the big consuming states mop up most of the taxes, including the cascaded taxes from previous stages the product has been through. So, UP and Bihar obtain a lot of the "tax benefits of processes that have taken place in other states. Under the VAT the largest chunk of taxes go to the state where the value addition is maximum normally at the production stage. Hence most of the taxes will go to the big producing states at the first sale. Consequently the consuming states are likely to lose revenue and the producing ones are likely to gain revenue. And guess

context we can recall the Governments declaration that it will bear the revenue loss of the states- 100% in the first year, 75% in the second year and 50% in the third year.

Secondly, India has a very large informal economy. A very large number of transactions are not invoiced. Under a value added tax, if a trader cannot produce the invoices for his purchases, he becomes liable for tax on all of his sales invoices,

The principal criticism of the VAT law is that if each state were to set up its own rates of value added taxation, the Indian businessman would have to navigate through 28 state laws and applicable rules. The one reason why the CENVAT has been so successful is that there was one single authority which collected the taxes and one single applicable law. This is not the case with the proposed VAT regime. The system of tax credits for previously invoiced inputs, which is so crucial to the VAT, is applicable separately to taxes paid in each state. So in Tamilnadu I can claim VAT credit for taxes paid in Tamilnadu and not for those paid in UP. Most states also claim the right to impose other non sales taxes (like luxury and entry taxes). VAT or no VAT, that is effectively a cascading of taxes.

The other concern is that the destination principle doesn't apply either under the proposed law, either. CST, the main state of origin tax, stays for at least the first year, although there is a commitment that it will be phased out. And as long as the CST stays corporate cannot go about rationalizing their distribution networks. Also staying in place is the traditional Indian tax disease– exceptions and exemptions. Politics has played no small role in this. So while textiles are not vatable, pharmaceuticals are Industry groups and trader associations, depending on the political health of the state governments, have negotiated themselves these exceptions and exemptions.

## CONCLUSION

So what we may actually have in April is a VAT regime which will not provide for tax credit across states, leaves the chief state-of-origin tax untouched, and government that retain the right to impose luxury and entry taxes. So much for the VAT creating a common market! which raises its own question. If no common market is being created,

much opposition from traders and other lobbies, why are we going ahead with the transition to VAT? Simple. An endless stream of populist measures have emptied the state treasuries around the country. To raise money, the states either need to increase taxes which probably would dilute the positive political impact of the free power and other goodies they've been handing out or they need to plug loopholes in their tax collection system. To them, the VAT is simply a sophisticated anti-evasion tool that could bring money into their coffers.

After two false dawns that might at least be a beginning.

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# Economics of Value Added Tax

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Value Added Tax, one of the most radical reforms to be proposed for the Indian economy, could finally become a reality after four years of political and economic debate. Yet, the biggest hurdle before the government 'is not making India "a common market" through a uniform sales structure, but removing a complicated tax structure that also allowed for fraudulent practices.

The decision to introduce VAT was publicly discussed first at a conference of state chief ministers and finance ministers in November 1999. At that time, the deadline of April 2002 was agreed upon to bring in VAT. However political instability and a lack of initiative pushed this reform to the backburner. Now, despite a backlash from the trading community and some political circles, there appears to be a realistic scope for VAT to be introduced.

Twelve states have so far passed legislation to implement the VAT regime and of these, five have sent their Bills for Presidential assent.

Value Added Tax (VAT) is a multi-stage sales tax levied as a proportion of the value added (Le sales minus purchase, which is equivalent to wages plus profits). It is a broad based tax covering the value added of each commodity by a firm during all stages of production and distribution.

The present system of sales tax collection prevalent in India involves collection of tax at one point (first/last) from the transactions involving the sale of goods. VAT would, however, be collected in stages (instalments) from one stage to another.

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* *I owe my gratitude to Professor Kishor C. Samal of NCDS, Bhubaneswar to encourage me to write this paper.*

The mechanism of VAT is such that for goods that are imported and consumed in a particular state, the first seller pays the first point tax, and the next seller pays tax only on the burden exactly equal to the last point tax. The concept is akin to excise duty paid by the manufacturer, who in turn, claims a credit on input taxes paid. Excise duty is on manufacture, while VAT is on sale and both work in the same manner, according to the White Paper on VAT released by finance minister Chidambaram. The document was drawn after all states barring UP, were prepared to implement VAT from April, 2005.

So VAT, proposed to be implemented from April 1, 2005, will replace general sales tax, besides purchase tax, luxury tax, entry tax, turnover tax as well as surcharges on any of these taxes, across all states of the country.

A common market is necessary to provide access for industry and primary products, including food grains, so that they can be sold across the country without huge price differences. And VAT intends to develop a seamless common market in the economy. VAT rules will be applicable only to those traders who have a turnover of at least Rs. 5 lakh.

## HISTORY

VAT was first introduced in France in 1954. France became the first European country to implement VAT on an extensive scale. It was not, however, at first a complete system of VAT, since it applied only to transactions entered into by manufacturers and wholesalers. It was supplemented by a separate tax on services. In addition, there were special excises, which were levied on services and distribution.

The tax was thus a full-blown consumption-type VAT on the industrial sector where all investment expenditures were fully detected. However, retailers and agriculturists were not included in the coverage of VAT.

A further reform measure which was initiated in January, 1968, consisted essentially of an extension in the coverage of VAT. Several activities were included as VAT was extended to all transactions formerly subject to the local tax and to the tax on services, which were then abolished. In addition, VAT was imposed on goods transport and other transactions. A further reform included services under VAT. The tax base was finally broadened to include agriculture in its ambit in

1984. Agriculturists were given the option to pay VAT, but those who opted for VAT were required to remain under VAT for at least three years.

Over the years, Value Added Tax has come to occupy an important place in the fiscal armoury of nearly all industrialised countries and in a large number of Latin American, Asian and African countries. Though there is a wide international acceptance of VAT particularly in countries with large public sectors in need of a broad-based and buoyant general sales tax, there is no VAT in Australia, Japan, Canada and the USA. These industrialised countries have resisted the introduction of the VAT due to various reasons.

## A WHITE PAPER ON STATE-LEVEL VALUE ADDED TAX

The White paper on Value Added Tax was passed by The Empowered Committee of State Finance Ministers, constituted by the Ministry of Finance, Government of India on the basis of the Resolution adopted in the Conference of the Chief Ministers on November 16, 1999.

Finance Minister P.Chidambaram unveiled the White Paper on Value-Added Tax (VAT) which has been endorsed by States for implementation from April this year. This is the first document which has been collectively prepared and put out to the people of the country by the Finance Ministers of all the states.

The Chairman of the Empowered Committee on VAT, Asim Dasgupta said the cascading effect of tax will come down after the introduction of VAT and VAT will lead to increase in revenue of States although there may be loss in revenue in the initial years in some states.

The White paper is a result of collective efforts of all the States in formulating the basic design of the State-Level Value Added Tax (VAT) through repeated and candid discussions in the Empowered Committee of State Finance Ministers.

While the State-level VAT has many advantages, it is a State subject derived from Entry 54 of the State List, for which the States are sovereign in taking decisions. On these decisions on VAT, the States, through discussions in the Empowered Committee have found it in their interests to avoid unhealthy competition and have certain features of VAT to be common for all the states. These features will constitute the

basic design of VAT. At the same time, the states will have freedom for appropriate variations consistent with this basic design. This White Paper is a collective attempt of the States to strike a balance between this needed commonality and the desired federal flexibility in the VAT structure.

The White Paper also strikes a balance between what is possible in the VAT design to begin with and what can be improved upon in subsequent years as we gather more experience.

## 1. Justification of VAT and Background

In the existing sales structure, there are problems of double taxation of commodities and multiplicity of taxes, resulting in a cascading tax burden. For instance, in the existing structure, before a commodity is produced, inputs are first taxed, and then after commodity is produced with input tax load, output is taxed again. This causes an unfair double taxation with cascading effects. With the introduction of VAT, the benefits will be as follows.

- A set-off will be given for input tax as well as tax paid on previous purchases.
- Other taxes, such as turnover tax, surcharge, additional surcharge, etc. will be abolished.
- Overall tax burden will be rationalized.
- Prices will in general fall.
- There will be self-assessment by dealers; inspection and assessment would be confined to selected cases.
- Transparency will increase.
- There will be higher revenue growth.

VAT will therefore help common people, traders, industrialists and also the Government. It is indeed a move towards more efficiency, equal competition and fairness in the taxation system.

For the benefits stated above, a full-fledged VAT was initiated first in Brazil in mid-1960s and then in European countries in the 1970s and subsequently introduced in about 130 countries, including several federal countries. In Asia, it has been introduced by a large number of countries from China to Srilanka. Even in India, there has been a VAT

system introduced by the Government of India, about last ten years in respect of Central excise duties. At the State-level, the VAT system as decided by the State Governments would now be introduced in terms of Entry 54 of the State List of the Constitution.

In fact, a preliminary discussion on state-level VAT took place at a meeting of chief ministers in 1995. It was convened by Dr. Manmohan Singh, the then Union Finance Minister. The decision to introduce VAT was, however, publicly discussed first at a chief ministers' conference in November 1999, in which state finance ministers were also present. The original deadline for introducing VAT was fixed in April 2002. But, it turned out to be a political issue before every election, and all major parties came to a tacit understanding of not pushing it too hard before any poll.

After the General elections, politics succumbed to the dynamics of economy. The forces opposing VAT lost ground, as they were unable to get any political asylum. At present, only UP has kept itself aloof from the new regime. Twelve states have so far passed legislation to implement VAT, of which five have sent their bills for presidential assent.

## 2. Design of State-Level VAT

The design of State-level VAT has been worked out by the Empowered Committee through several rounds of discussion and striking a federal balance between the common points of convergence regarding VAT and flexibility for the local characteristics of the States. Since the State-level VAT is centred around the basic concept of "set-off" for the tax paid earlier, the needed common points of convergence also relate to this concept of set-off/input tax credit, its coverage and related issues as elaborated below.

### Concept of VAT and Set-off/Input Tax Credit

The essence of VAT lies is in providing set-off for the tax paid earlier, and this is given effect through the concept of input tax credit/ rebate. This input tax credit in relation to any period means setting off the amount of input tax by a registered dealer against the amount of his output tax. The Value Added Tax (VAT) is based on the value addition to the goods, and the related VAT liability of the dealer is calculated by deducting input tax credit from tax collected on sales during the payment

If, for example, input worth Rs. 1,00,000/- is purchased and sales are worth Rs. 2,00,000/- in a month, and input tax rate and output tax rate are 4% and 10% respectively, then input tax credit/set-off and calculation of VAT will be as shown below :

| | | | |
|---|---|---|---|
| (a) | Input purchased within the month | : | Rs.1,00,000/- |
| (b) | Output sold in the month | : | Rs.2, 00,000/- |
| (c) | Input tax paid | : | Rs. 4,000/- |
| (d) | Output tax payable | : | Rs. 20,000/- |
| (e) | VAT payable during the month After set-off/input tax credit [(d)-(c)] | : | Rs. 16,000/- |

**Coverage of Set-Off/Input Tax Credit**

This input tax credit will be given for both manufacturers and traders for purchase of inputs/supplies meant for both sales within the State as well as to other States, irrespective of when these will be utilised/sold. This also reduces immediate tax liability.

Even for stock transfer/consignment sale of goods out of the State, input tax paid in excess of 4% will be eligible for tax credit.

**Carrying Over of Tax Credit**

If the tax credit exceeds the tax payable on all sales in a year, the excess credit will be carried over to the end of next financial year. If there is any excess unadjusted input tax credit at the end of second year, then the same will be eligible for refund.

Input tax credit on goods will also be available for traders and manufacturers. Tax credit on capital goods may be adjusted over a maximum of 36 equal monthly instalments. The States may at their option reduce this number of instalments.

There will be a negative list for capital goods (on the basis of principles already decided by the Empowered Committee) not eligible for input tax credit.

**Treatment of Exporters, etc.**

For all exports made out of the country, tax paid within the State will be refunded in full, and this refund will be made within three months.

Units located in SEZ and EOU will be granted exemption from payment of input tax or refund of the input tax paid within three months.

**Inputs Procured from Other States**

Tax paid on inputs procured from other States through inter-State sale and stock transfer will not be eligible for credit. However, a decision has been taken for duly phasing out of inter-State sales tax or Central sales tax. As a preparation for that, a comprehensive inter-State tax information exchange system is also being set up.

**Treatment of Opening Stock**

All tax-paid goods purchased on or after April 1, 2004 and still in stock as of April 1, 2005 will be eligible to receive input tax credit, subject to submission of requisite documents. Resellers holding tax-paid goods on April 1, 2005 will also be eligible. VAT will be levied on the goods when sold on and after April 1, 2005 and input tax credit will be given for the sales tax already paid in the previous year. This tax credit will be available over a period of 6 months after an interval of 3 months needed for verification.

**Compulsory Issue of Tax Invoice, Cash Memo or Bill**

This entire design of VAT with input tax credit is crucially based on documentation of tax invoice, cash memo or bill. Every registered dealer, having turnover of sales above an amount specified, shall issue to the purchaser serially numbered tax invoice with the prescribed particulars. This tax invoice will be signed dated by the dealer or his regular employee, showing the required particulars. The dealer shall keep a counter foil or duplicate of such tax invoice duly signed and dated. Failure to comply with the above will attract penalty.

**Registration, Small Dealers and Composition Scheme**

Registration of dealers with gross annual turnover above Rs.5 lakh will be compulsory. All existing dealers will be automatically registered under the VAT Act. A new dealer will be allowed 30 days time from the date of liability to get registered.

Small dealers with gross annual turnover not exceeding Rs.5 lakh will not be liable to pay VAT. States will have flexibility to fix threshold

exceeding Rs. 50 lakh who are otherwise liable to pay VAT, shall however have the option for a composition scheme with payment of tax at a small percentage of gross turnover. The dealers opting for this composition scheme will not be entitled to input tax credit.

**Tax Payer's Identification Number (TIN)**

This will consist of eleven digit numerals throughout the country and will be given to each tax payee.

**Return**

Under VAT simplified form of returns will be notified. Returns are to be filed monthly/quarterly as specified in the State Acts/ Rules and will be accompanied with payment challans.

**Procedure of Self Assessment of VAT Liability**

The basic simplification in VAT is that VAT liability will be self-assessed by the dealers themselves in terms of submission of returns upon setting off the tax credit.

**Audit**

Correctness of self-assessment will be checked through a system of Departmental Audit. A certain percentage of the dealers will be taken up for audit every year on a scientific basis. The audit team will conduct its work in a time bound manner and audit will be completed within six months. The audit report will be transparently sent to the dealer also.

**Incentives**

Under the VAT system, the existing incentive schemes may be continued in the manner deemed appropriate by the States after ensuring that VAT chain is not affected.

**Coverage of Goods under VAT**

In general, all the goods, including declared goods will be covered under VAT and will get the benefit of input tax credit. The only few goods which will be outside VAT will be liquor, lottery tickets, petrol, diesel, aviation turbine fuel and other motor spirit since their prices are not fully market determined. These will continue to be taxed under the

provisions in the VAT Act itself, and with uniform floor rates decided by the Empowered Committee.

**VAT Rates and Classification of Commodities**

Under the VAT system covering about 550 goods, there will be only two basic VAT rates of four per cent and 12.5 per cent plus a specific category of tax-exempted goods and a special VAT rate of one percent only for gold and silver ornaments etc. Thus the multiplicity of rates in the existing structure will be done away with under the VAT system.

Under exempted category, there will be about 46 commodities comprising of natural and unprocessed products in unorganised sector, items which are legally barred from taxation and items which have social implications. Included in this exempted category is a set of maximum of 10 commodities flexibly chosen by individual states from a list of goods (finalised by the Empowered Committee) which are of local importance for the individual States without having any inter-state implication. The rest of the commodities in the list will be common for all the states. Under four percent VAT rate category, there will be the largest number of goods (about 270), common for all the States, comprising of items of basic necessities such as medicines and drugs, all agricultural and industrial inputs, capital goods and declared goods. The schedule of commodities will be attached to the VAT Bill of every State. The remaining commodities common for all the states will fall under the general VAT rate of 12.5 per cent.

In terms of decision of the Empowered Committee, VAT on items relating to sugar, textile and tobacco, because of initial organisational difficulties will not be imposed for one year after the introduction of VAT, and till then the existing arrangement will continue. The position will be reviewed after one year.

**Objectives to Introduce VAT**

The proposed VAT rates in India are relatively low in comparison to other countries that have implemented it. The minimum standard rate of VAT in the European Union is 15 per cent though different rates apply in the member states. The maximum rate in the EU is pegged at 25 per cent. Against this the two rates that cover the highest number of items in India already announced stand at 4 per cent and 12.5 per cent.

| Cheaper Items After Implementing VAT | Present Sales Tax(%) | Tax after VAT (%) |
|---|---|---|
| Mobile phones, computers, telephones, telephone parts, industrial labels, communication equipment, teleprinter, wireless equipment, transmission towers | 12 | 4 |
| Skimmed milk, coffee, paper, printed material, diaries, calendars, ready-made garments (Rs. 1000+), printing ink, rail coaches, engines, ships and other vessels. | 8 | 4 |

**What will become more expensive?**

**Flour, dal, rice.**

So far no sales tax was charged on these items. With VAT, a unified taxation system will be worked out and these will be charged at 4 per cent. Products including petrol, diesel, aviation turbine fuel, liquor and lottery tickets will be exempted from VAT.

According to the government's version, the misconception that since traders will be charged at every point of transaction commodities will become more expensive for the consumer should be waived off. Many essential commodities will become cheaper as the rate of tax will go down.

**The main objective of implementing VAT is as follows :**

- To have a uniform tax regime for all states. From April 1, 2005 some commodities that were charged a high sales tax will be taxed differently under the Value Added Tax (VAT) system. A full set-off for input tax credit as well as tax on previous purchases will be provided under VAT. All other taxes such as the turnover tax, surcharge on sales tax, additional surcharge, and special additional tax will be subsumed in VAT. The exception is octroi.
- VAT could unite India into a large common market. This will translate to better business policy. Companies can start optimising purely on logistics of their operations, and not based on tax minimisation. Lorries need not wait at checkpoints for

Reduced transit times and lower inventory levels will boost corporate earnings.

- VAT will prevent cascading effect of taxes through input rebate and help avoid distortions in trade and economy by ensuring uniform tax rates.
- State and Central governments gain in terms of revenue. VAT has in-built incentives for tax compliance only by collecting taxes and remitting them to the government a seller can claim the setoff that is due to him on his purchases. Everyone has an incentive to buy only from registered dealers- purchases from others will not provide the benefit of credit for the taxes paid at the time of purchase. This transparency and in-built incentive for compliance would increase revenues. Industry and trade gain from transparency and reduced need to interact with the tax personnel. For those who have been complying with taxes, VAT could be a boon that reduces the cost of the product to the consumer and boosts competitiveness. VAT would be a major blow for tax evaders both manufacturers who evade excise duty payments and traders who evade sales tax. The new system of VAT would help increase national revenues by getting more people to pay tax.

## DIFFICULTIES OF IMPLEMENTING VAT

The features of VAT would be a matter of gratification for all who have been championing the cause of VAT in the country. However, there are quite a few odd features and loose ends that cause concern.

While prescribing a two-band uniform floor rates (4 per cent and 12.5 per cent) system, the White Paper (WP) provides for an exempted category not exceeding ten in number to be drawn up by the Empowered Committee (EC). When there is an exemption for some goods, there is no payment of duty for them. So there is no credit of duty on input used for manufacturing them. It is obvious that since there is no duty paid on the final goods, there cannot be any credit for the inputs. For there is no way to utilise the credit of duty if ultimately no duty is paid on the final products. This has been a major problem for those industries that want to pay the duty and get the CENVAT credit. The same problem will also persist for VAT.

Out of a total of 550 items, 270 come under the tax rate of 4 per cent. The rest come under a 12.5 per cent rate. It is difficult to see the

logic of having inputs charged under a concessional rate in a VAT regime that promises full credit for all inputs. It nullifies a major advantage of VAT that helps to dispense with the need to differentiate between intermediate purchases and final consumption. But for this the "revenue neutral" floor rate need not have been 12.5 per cent; instead it would have ranged between 8 per cent and 9 per cent and the loss from the change over, that the centre has promised to make up, would have been much less. While the losses will be computed by a formula (not specified in the Paper) there is clearly a moral hazard tempting the states to clamour for hefty compensation.

Binding the hands of the states in the matter of VAT rates takes away their most important power of taxation. The states seem to be all too happy to surrender their fiscal autonomy in exchange for the promise of compensation from the centre and thus be absolved of the fiscal responsibility that the link between decisions to spend and to raise revenue enjoins. The WP talks of "federal flexibility" at several places but seems to be quite firm about the uniformity in rates, little recognising that harmonisation does not require uniformity. It is precisely because of their fiscal autonomy that the member countries of the EU, while adhering to "floors" have spurned the proposal for a "single rate" of VAT for all. There is also a big question, if a state deviates from the common pattern of floor rates and incentives.

The White Paper does not give any clue about the tax paid on "Natural Gas" which is used by many industries in manufacturing for co-generation of Power and Steam.

## SOLUTIONS

- The White Paper does not provide a definite time frame on phasing out of Central Sales Tax (CST). According to FICCI, CST should be abolished to make India one common market or else there should be full set-off available like local sales tax. The existence of CST is a deterrent for free inter-state trade and commerce.
- The State Legislation and rules should be uniform across all states and introduced simultaneously all over the country. The integration of State Revenue Departments for exchanging information and data on input credits is the key area for smooth functioning of VAT.

## LIKELY IMPACTS OF VAT

Indian states will be VAT ready before April 1, 2005. Incidentally Haryana has already implemented it.

Finance Minister of India, P. Chidambaram said, "Vat will be the most important tax reform in independent India. VAT has proved extremely beneficial to consumers, tax payers and governments across the world. While consumers will get price advantage as they will have to pay lower tax for the product under VAT, the incentives to pay tax will boost compliance rate inflating the government's tax kitty. The best ego is that of Haryana whose revenues reportedly has shot up by 30 percent in about a year after it implemented VAT. The cascading effects of charging excise duties and sales tax on inputs at every stage of the production cycle will be removed as tax will now be imposed only on the value added at each level of production, VAT will also succeed in decreasing tax evasion as a manufacturer who refuses to declare his production will pay no VAT on his output and no income tax either, but he has already paid VAT on his purchased inputs and will not be able to claim a refund. Willy nilly, he is in the tax net.

Compensation to the states for any loss due to transition to VAT have prompted the states to agree to this change. Sales tax is about the only important avenue under their jurisdiction to raise revenue. An "Economic Times" survey of 20 Indian States found that about a third of their aggregate revenue is estimated to come from sales tax alone in 2004-2005. (Budget estimates) and this has been the story all along. The importance of sales tax in state's budgetary exercise will probably be best understood when compared with states own revenues earning figures. More than 60 per cent of states total tax revenue comes from sales tax alone. Now that VAT will replace sales tax one wonders how the state finance ministers will make their estimates. After all, this was about the only area they had at their disposal to tinker with effectively.

The implementation of VAT would lead to a shortfall in collections in the state. This would have an adverse impact on the states annual plans during the year as they will have so much less to spend on plan expenditure. States may take comfort in the fact that the Centre will compensate them for the shortfall when revised estimates are presented, but that may mean little when brakes will have to be applied on

Eminent economist **Prabhat Pattnaik** has contested government argument that Value Added Tax will be revenue neutral in the long run, saying the very nature of the new tax system is such that the states are sure to lose revenue.

So the likely impact of VAT presently is anticipated differently by the government and the economists. Only after its implementation the efficacy of VAT can be known.

## CONCLUSION

The attempt here has been to provide some dimensions to the extent of gain/loss to states from the introduction of VAT. Some would gain, while others would incur loss depending on the assumptions on increments to value added.

One way for the states to avoid incurring losses with introduction of VAT would be through variations in the rates and/or structure of tax. Variations in the tax structure however are being perceived as hindrances to the formation of a common national market. Clearly, the costs of imposing/assuring such uniformity would then have to be borne by the union government. The union government's assurance for compensation would trigger off a negative response from the states where non collection is rewarded. Any methodology to distinguish between "genuine losses" and "slack in collections" would be heavily contested especially since the databases for the states are rather poor.

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# Value Added Tax : The Indian Perspective

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## I. INTRODUCTION

The Finance Minister of India, P.Chidambaram unveiled the white paper on state level Value Added Tax (VAT) on 17th January 2005. This is the first document, which has been collectively prepared and put out to the people of the country by Finance Ministers of all the states. The report of the Empowered Committee, no doubt, seems to have set a stage for a realistic beginning of the integrated VAT with effect from 1st April 2005. In a vast country like India with numerous socio-economic and political differences, such a broad based participation in decision making definitely augurs well for the success of the change in the tax regime. It is a welcome step that the centre and the states can be true partners in ensuring good governance in the country.

However, all is well that ends well. Before implementation of VAT we should not be complacent and confident about the efficacy of the system particularly in the context of a developing federation like India. What is imperative at the moment is to spread proper understanding of the VAT system with all its pros and cons such that it can be successfully implemented to achieve the desired objectives.

The present paper is a modest attempt not to resolve the controversies that beset VAT but to delineate the genesis, problems and prospects of VAT in Indian perspectives. The second section deals with the genesis of VAT. Theoretical and practical issues are elaborated in section-III. The experience of the VAT implementing countries is discussed in section-IV. The section before the concluding one examines

## II. GENESIS OF VAT

The concept of VAT was first introduced by F. Vans Siemens in 1918 as an alternative to turnover tax in Germany. Then it was recommended by Carl S. Soup in his report "Tax reform in Japan" in 1949 as a substitute for turnover tax. The Japanese Diet did enact such a tax in 1950 but repealed it before it went into effect. France was the first country to adopt VAT in the year 1954 in order to do away with the evils of the complex and unmanageable French system of the then turnover taxes. Impressed by the magnificent results and considered as a 'miracle tax', most of the European countries adopted VAT system. Some developing Latin American and African countries also followed suit. Now around 150 countries (both developing and developed) across the world experience this system of tax administration.

VAT is a tax imposed at every stage of value addition in the production and distribution chain. However, tax credits are permitted at every stage for taxes paid earlier in the chain. In essence VAT is a multistage sales tax that exempts the purchase of intermediate goods and services from the tax base. Value addition refers to the difference between the sales proceeds and cost of production (in manufacturing activity) and the difference between value of sales and purchases (in case of trading). For all firms in the national economy, value added is the National Product and therefore VAT may be considered as a tax on National Income.

The administration of VAT does not warrant individual firms to compute value added. It is administered by the invoice method. All transactions are taxed at a fixed proportional rate irrespective of whether they are final or intermediate transactions. Tax payers are then allowed to deduct the taxes paid on intermediate purchases. Invoice method is also called the tax credit method. The method may be written as follows.

Tax Liability (T) = (tax payable on sales)--(tax paid on intermediate goods)

= t (sales) - t (purchases)

= t (value added) ,

where t = tax rate.

Depending upon whether consumption goods or both consumption and capital goods are to be covered in the tax net, the tax function may

(i) Product type VAT where tax is imposed on Gross National Product (GNP) that is the total value of all final consumption goods and capital goods. Therefore.

$T = t(Y)$, where Y = GNP

(ii) Income type VAT where tax is imposed on Net National Product or National Income.

$T = t(Y - D)$, where D = Depreciation

(iii) Consumption type VAT where tax is imposed on the value of final consumption goods.

$T = t(Y - I)$, where I = Investment

Though the first and second categories of VAT are found in some countries, the third category is most common and popular.

## III. THEORETICAL AND PRACTICAL ISSUES

VAT is justified by the economists on the following important considerations:

- it is a neutral tax
- it removes cascading and pyramiding effects
- it is self policing and therefore generates more revenue
- it promotes competitiveness of the exports.

This section examines the theoretical and practical issues in the light of the aforesaid considerations.

- **Neutrality**

The theory states that a tax should be neutral between choices for consumers and producers. In other words, it should not distort consumer's and investor's choices. Moreover, it should be neutral between labour and capital and therefore should not favour capital intensive investments against labour intensive investments. In general it should not distort the free play of market forces that ensures Pareto optimality.

A general and uniform VAT does not distort the consumer's choice between goods, as the relative prices of goods do not change. But a discriminatory VAT with multiple rates and exemptions will distort the

Between labour and capital VAT is not neutral because it does not treat capital and labour equally. While it gives credit for tax paid on capital, it does not do so for labour expenses.

Regarding allocation of resources, distortion takes place through a movement of resources from the formal sector to the less efficient informal sector (exempted from VAT net). There may be a dead weight loss due to VAT.

However, a fundamental question is often raised regarding the desirability of neutral fiscal policy that ensures Pareto efficiency particularly in the context of a developing country like India. James Cutt (Taxation and Economic Development in India p-384) has rightly argued that the principle of neutrality whereby the tax system seeks to avoid interference in private allocation of resources is defendable in a developed economy, but is of little relevance to the problem of economic development. The tax policy should be diversionary and proactive towards development until possibly the economy is strong enough to rely on free market. Thus a developing country is not the proper field for neutral game.

- **Cascading**

Cascading occurs when taxable goods are produced by using taxable inputs. Since cascading effect leads to distortion of allocation of resources the mechanism to remove it is to give credit for input tax and that is what VAT precisely does. Some economists argued that VAT is not the only tax to remove cascading. The Retail Sales Tax (now prevalent in USA) which does not create any cascading is a better alternative.

It may be pointed out that a discriminatory VAT with exemptions does not completely eliminate the problem of cascading.

- **Self Policing**

The reason why VAT is preferred is its self-policing character. VAT liability is self-assessed by the dealers themselves. Since it provides a better audit trail the system helps to reduce evasion and thereby leads to significant growth in the tax revenue. However, the success of VAT to a larger extent depends upon the competence of the administration and the character of the stake-holders.

- **Export Promotion**

It is argued that zero rating of exports makes the output cheaper and competitive in the world market and thereby leads to boosting up of exports. But a study on exports in UK, Italy, Germany and Sweden revealed that VAT does not have any significant effect on export. It is the Customs Union that drives international trade not VAT.

## IV. EXPERIENCE OF VAT IMPLEMENTING COUNTRIES

The experience of VAT implementing countries reveals that in spite of its strength to generate revenue, it has become a source of dirty money and its laundering (VAT Monitor, July-2002). The Economic and Social Committee appointed by the European Commission concluded that the history of VAT legislation in Europe can be summed up in one word "Failure" (VAT Monitor, Sept. 2001). Recent IMF study on VAT in a book titled 'Modern VAT' has observed that the evidence of the supposed ability of VAT to bolster revenue is weak. Regarding efficiency the study says, "There is evidence that the gain from adopting VAT is less marked, all else being equal, in less developed countries". Peggy B. Musgrave also in her study concluded that VAT is not well suited to serve a decentralised consumption tax imposed by several jurisdictions within a Federal Union (VAT Monitor, 2001). The same view is endorsed by Michail Keen in a recent IMF working paper that while VAT is a good tax for trading with one another, it is a bad tax to give to lower level jurisdictions in a federation. Thus it may be construed that VAT as such is not an unmixed blessing particularly in a federal set up like ours.

## V. VAT PERSPECTIVE IN INDIA

VAT is not new for India. The Central Government now follows the CENVAT system to impose excise duty on manufacturing. Previously we had the experience of MODVAT. States like Andhra Pradesh, Kerala, Tamil Nadu, Madhya Pradesh and Maharastra have also experienced with some form of VAT. But after reforms it is realised that the existing set up cannot travel long. The urgent need for harnessing opportunities offered by globalisation and to keep stand ourselves in tune with the international standards and competition, the states have to move with the centre and agree on a harmonious state level VAT.

Though the Tax Reform Committee (1992) headed by Dr. Raja J.

agency to work out the modality of VAT, it has taken more than a decade for the states to go along with the Centre. The Committee of State Finance Ministers in 1995 and 1998 made recommendation to replace sales tax by VAT. But the decision to initiate steps towards VAT in the states were taken on 16th Nov. 1999 at a meeting of the state Chief Ministers convened by the then Finance Minister Yashwant Sinha. A Standing Committee of State Finance Ministers was appointed to accomplish the task. Later on this committee altered into the Empowered Committee. Target dates were set for ushering in the new regime. After two misses, the date set this time 1st April 2005 seems to be firmly in sight.

Although the present proposal does not appear to be a full- fledged destination type VAT that what economic theory advocates as a model for the trade tax reform across the world, the design of VAT outlined in white paper incorporates some of its basic features. The details of the proposal is enumerated in the white paper. This section points out some loose ends that cause concern.

- Introduction of VAT to do away with sales tax seems to be unconstitutional. Since the right to impose sales tax has been granted to the states under Article 246 of the constitution, neither the centre nor the state governments have power to abolish this right without amending the constitution. Moreover, the state governments cannot enact legislation on VAT since it is not included in the state list of the 7th schedule. The centre can of course use residual powers granted to it under Article-248 to introduce VAT. Thus necessary amendments should be made to circumvent legal and constitutional difficulties.
- The present proposal that binds the hands of the states in the matter of VAT rates no doubt will take away their most important power of taxation. In a federal structure such a proposal undermines the state's fiscal autonomy.
- The impact of VAT will be different for different states. While some states seem to gain, others may lose. The centre of course has promised to make up the loss for this change over. While the losses will be computed by a formula (not specified in the paper), there is clearly a principal-agent problem and moral

- The proposed VAT that is treating the customers differently will be susceptible to compliance asymmetry. The system can be misused in its application whenever customers find advantages in mis-declaration, they will do so and policing will be impossible.
- It is proposed that there is a threshold of Rs.5 lakhs above which VAT will be imposed. Thus a firm that produces or sells goods worth slightly more than Rs.5 lakhs will split to avoid tax. This indicates that VAT may lead to fragmentation of existing business houses into small-scale units.
- In state VAT, majority of stake holders will be the traders who have a long tradition of doing business on cash and carry basis without documents. It may now create practical problems for them since they do not maintain records properly.
- VAT may accentuate regional disparities. The revenue income of the developed states where there is more value added due to strong demand and supply factors will increase whereas that of the less developed states may decline permanently due to weak demand and supply factors. Moreover, the investment opportunities in the latter category states may decline as they cannot offer special tax incentives for the investors.
- With administered price, huge subsidies, deficiency in capital and infrastructure facilities and Planning Commission, the advantages of VAT is difficult to realise in India. There is no reason to presume that it will succeed in India because it has succeeded in developed countries. We have to keep in mind that India ranks among the most corrupt states (Transparency International). Arun Kumar in his book on the black economy of India has shown that 40 percent of our GDP is black as compared to 6 percent in France, 7.2 percent in UK and 4.5 percent in USA. When the stake-holders of India are able to handle the black money to the tune of 40 percent, will it be difficult on their part to indulge in fake and fraudulent transactions to nullify the advantages of VAT? False input credit may eat up the revenue.
- It is also essential to bring service and imports into VAT chain. While VAT on imports will improve tax compliance, VAT on

import and service tax is to be expedited at the central level such that these two important spheres of taxation can be integrated along with the AED items into VAT system of the states from the second year as proposed in the white paper.

## VI. CONCLUSION

From the foregoing discussion it may be concluded that VAT is not an unmixed blessing. In the context of India, it may be considered as a first step towards tax rationalisation. For the state VAT to become a reality, a high level commitment is required on the part of the tax administrators and business houses including the small traders. What is required at the moment is a comprehensive awareness program across the country to appraise and educate all concerns regarding the implications of VAT. Good care should be taken from the beginning such that the remedy is not worse than the cure.

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# VAT : A Call for Change

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Value Added Tax (VAT) is a tax on the value added to the commodity or services. VAT is imposed on the value that business firms add to the goods and services that they purchase from other firms .It adds value by processing and handling these purchased items with its own labour force or its machinery, buildings or other capital goods. Then it sells the resulting product to consumers or, to other firms. Therefore the difference between the sale proceeds and the cost of the materials etc. that it has purchased from other firms is its value added. The VAT is imposed each time the product is resold or when a product is passed from a manufacturer to a wholesaler and from a wholesaler to a retailer. Thus it is a multistage tax levied as a proportion of its value added. In the words of L.K. Jha committee, 1976, popularly known as Indirect Taxation Enquiry Committee, "VAT in its comprehensive form is a tax on all goods and services except exports and government services, its special characteristic being that it falls on the value added at each stage, from the stage of production to retail."

The VAT is similar to national sales tax. However, instead of implementing as a tax of certain percentage at the time of retail sale, there is a smaller tax imposed each time the product is resold or when the value has been added.

- VAT is a tax on consumer spending
- VAT is a multistage tax which involves credits at each stage
- Tax on sales is called output tax

**At a VAT rate of 10%, the amount of tax is to be calculated as follows:**

| | Input tax | Net price | Output tax | Gross price | VAT to CTD |
|---|---|---|---|---|---|
| Manufacturer | 0 | 500 | 50 | 550 | 50 |
| Wholesaler | 50 | 700 | 70 | 770 | 20 |
| Retailer | 70 | 900 | 90 | 990 | 20 |

Consumer bears the full amount of VAT of 90 and Commercial Tax Department (CTD) collects the full amount 90 but in stages.

**Necessity of VAT :**

India for years has been making best efforts for rationalising the present indirect tax structure. The eminent economists and experts have looked to VAT as a prospective substitute of the present tax structure. Under the existing sales tax law the dealers are subject to mandatory assessments. At present the Commercial Tax Department of Orissa has more than 60,000 registered dealers and only 159 assessing officers to handle these dealers. Practically the concerned officers hardly find any time for a quality assessment. The ratio of collection of admitted tax to demand tax in the state is 95 :05; i.e. assessment accounts for only 5% of the total tax collected.

This is one of the most radical reforms to be proposed for the Indian economy, could become a reality after four years of economic and political debate. The biggest hurdle before the Indian government is not only making India a common market through a uniform sales tax structure but to remove the complicated tax structure that allows fraudulent practices. The government of India had constituted a high level committee in August 1991 known as the Tax Reforms Committee (TRC) under the chairmanship of Prof. Raja Chelliah. The Committee felt that the country should move towards full-fledged VAT system covering services and commodities. Service tax must be a part of VAT at the central level. It envisaged that at central system a tax could be levied on everything that enter into the productive process. The committee emphasised the importance of moving towards VAT, for making the system of indirect taxation broadly revenue neutral in relation

the exempted commodities. It is felt that VAT mechanism would mitigate the burden of service tax and take care of the cascading effects on the ultimate consumers. VAT aims to cut multiple layers of state and federal taxes and impose uniform tax rates across the country. The decision to introduce VAT was publicly discussed first at the conference of State Chief Ministers and Finance Ministers in November 1999. At that time, the deadline of April 2002 was agreed upon to brief VAT. However, the political instability and the lack of initiative pushed these reforms to the back burner. Now a year later despite backlashes from the trading community and some political circles, these appear to be introduced. Twelve states have so far passed legislation to implement the VAT regime and of these five have sent their Bills for Presidential assent. Under the proposed VAT system all states will have to align their sales tax/VAT rates towards a revenue neutral band of 1.0-12.5%.

The VAT has the additional advantage in countries plagued with tax evasion and as tax collection takes place in stages, tax evasion at one stage would be automatically compensated at a later stage in the production chain if the producer at that stage is not a tax evader. India, where the multiplicity of taxation is a major evil VAT has additional attraction. Industry watchers say that the VAT system if enforced properly will form part of the fiscal consolidation strategy for the country. It could in fact help address the fiscal deficit problem and the revenues estimated to be collected could actually mean lowering of the fiscal deficit burden for the government.

VAT was first introduced in France in 1954, with the imposition of tax only applied to transactions entered into by manufacturers and wholesalers which was not a complete system of VAT. It was introduced to remove the evils of a turnover tax and to boost investment. Later UK., Federal Republic of Germany, Denmark, Norway, Italy, Sweden, Finland, Brazil, Netherlands, Austria etc. also introduced this system. 120 countries had adopted the system, some of them almost 30 years ago. Most countries which adopted VAT have seen their revenue increase. The global experience with regard to VAT was that it promoted efficiency in production by allowing tax credit cascading for inputs and reducing the impact of multiple levies. In the process it is not only the consumers but also the producers who benefit. Moreover the government does not lose revenue since the lowering of the tax rates is more than offset by the increased economic activity.

The Orissa Value Added Tax Act 2004 has already been approved. It extends to the whole state of Orissa and is to be implemented from 1st April 2005. In accordance with the provisions of this Act, a VAT is on the sale and purchase of goods by a dealer. A turnover tax in lieu of VAT is to be imposed on taxable turnover of sales of every retailer registered under the Act, whose annual gross turnover does not exceed rupees 10 lakh and dealer of any specific class or category notified under section- 16.

**Some Points Against VAT :**

Small businessmen and traders are likely to be badly hit by the new system of tax as many of them have used loopholes in the current system to avoid paying taxes. A section of the retail community went on strike stating that some anomalies linked to the proposed VAT system have not been addressed. A high power committee including the State Finance Ministers had pointed out the anomaly to the government last year. However the Center continues to ignore the suggestions and this makes the situation more difficult. The government is looking at the whole issue through a single dimension of collecting revenues, though the retail community will be hit by the multi point VAT system. The state government concerns may be seen as political lobbying. Since large sections of the trading community have protested against VAT, both the BJP and Congress have not made any categorical statement for or against VAT. Instead they have tried to befriend the trading community. Each party sings a different tune in different states in this matter. It would also mean less tax evasion and more earning for the states. But no political party can afford to ignore the agitating trading community, which becomes a vexed issue for the political parties.

The VAT in the developing countries is less uniform, less neutral and less comprehensive than that of the developed countries. As such Morocco, Uruguay, Brazil, Tunisia, Algiers etc. are facing the problem of more difficult tax administration, increased cases of tax evasion and higher cost of collection.

The power to enhance the tax rate will rest with the finance department of the state. The industry feels that this will be largely misused and rates could be increased according to the wishes of the

control over every dealer and trader and will have the authority to inspect not only the books of accounts but also verifying cash or stocks too. This is absurd, feels the industry. The department will have the power to attach provisionally any money which is due or which may become due in the course of any enquiry, inspection or proceeding.

The sales tax commissioner has the power to decline any transaction null and void. According to the industry it would be almost impossible to get the commissioner's clearance to make a contract, and would give rise to various malpractices. Even the dealers will be heavily penalised for any mistake they may make, the authorities will go scot-free for any mistake they may make. Moreover the interest charged for late payment is 24% whereas late refund would attract only a 9% interest. The new VAT system gives power to the authorities to create 'check and balance' at their discretion.

VAT is likely to put an additional financial and administrative burden. The VAT, consumption type encourages capital intensive technology, which is not desirable in a labour abundant economy like ours. It may also raise an explosive political issue involving autonomy of States.

VAT is also regressive in nature hitting hard not only the poorer states but also to the poorer people and thus may result in economic disparity amongst the people within the state as well as widening the gap between rich and poor states of the country.

Besides the above, the risk parameters involved in the VAT system are;

- non-filing of returns, withholding of the admitted tax,
- late filing of returns,
- excess sale to tax free zones like SEZ (Special Economic Zone), STP (Software Technology Projects), EHTP, EOUs,
- dealing in tax evasion prone items such as motor parts, marbles, electrical goods etc.;
- dealers show tax free sales; manufacturers may show production of tax free goods,
- non-existence of godowns or place of business;
- existence of more than one place of business, dealers having no fixed place of business etc.

Consequentially it may lead to 'problems of escaping assessment or underassessment or dealers may be allowed wrongly any deductions from heither turnover or input tax credit to which they are not eligible.

## CONCLUSION :

The experience from various practices adopted by different countries coupled with the principle of taxation applicable to VAT suggests two fold lessons for the non VAT countries in general and developing countries in particular. First it proclaims that some of the choices such as types of VAT, depend upon the superiority of a particular choice. Hence most of the VAT countries have adopted a particular type e.g. consumption VAT only. Secondly, some of the issues connected with the past experience of a country concerned are extremely important to decide the issues related to the administration of VAT. The amount of revenue yield of VAT cannot be predicted in a country like ours where there is no transparent economic system. Provisions are made in Orissa Value Added Tax Act to reduce lacuna and to take action against the dealers. Tax authority will make provisional assessment on the basis of either past returns, past records or information received. As there is no system of recheck, assessment authority will look after these loopholes and will take actions against the defaulters. 'But who will take care of the inherent defects that exist in the department itself leading to corruption at every stage on the one hand and harassment to the dealers on the other ?

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# Brewing on VAT : A New Resolution in Indian Tax Scenario

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## I. INTRODUCTION

Value Added Tax (VAT), one of the most radical reforms proposed for the Indian economy, could finally become a reality after several years of political and economic debates. Yet the biggest hurdle before the government is not making India 'a common market' through a uniform sales tax structures, but removing a complicated tax structure that also allowed for fraudulent practice. The decision was taken to introduce VAT to overcome these fraudulent practices. But there is considerable apprehension among tax payers, tax collectors and the general public about the levy of VAT. There are (i) questions about state of preparedness for levying VAT, (ii) the questions and proposed structure and operation of the levy, and (iii) finally the impact of the VAT on economic activities. All these are important issues and have to be resolved before VAT is levied. The key objective of this paper is to highlight various apprehensions and crisis on introducing VAT and to suggest policy measures to overcome this crisis. We personally feel that the discovery of VAT is one of the greatest findings of mankind in the framework of tax structure.

## II. WHAT EXACTLY VAT IS ?

Given the country's federal structure, the latest brilliantly accomplished reforms designed to develop the quality of tax structure provides a peerless account of various issues and paradigms of VAT (or VATs) and also focuses on the way in which a VAT can be introduced into India. In its purest form, VAT is simply a reformed stage in the existing sales tax regime, levied on value added at each stage on production/distributions chain and not the entire invoice value of the

VAT aims at eliminating cascading effect of taxes on commodities and thereby reduces eventual cost on the consumer.

Before going to discuss fully the relevant issues regarding VAT, it would be justifiable to give some ideas about features and the levying process of VAT in a nut-shell first.

**Some features :**

- VAT is collected at the same rate (that is being charged today), but with slightly different methods.
- Collected in instalments at each transaction in the production distribution cycle.
- In many respects it is equivalent to a last point sales tax.
- Avoids distortions in trade and economy-uniform tax rates.
- Lesser chances of evasion as it encourages better compliance due to the availability of set off taxes paid-gives level playing field to an honest taxpayer.
- Encourages widening of tax base and reduction in rates of tax.
- No double taxation as if tax is collected once, it is allowed to be credited later.

**Why VAT?**

Devising a scheme of taxation in a federal country with powers of taxing domestic production and trade divided between centre and states is not a simple affair. However in view of this it is now well accepted that the best way to go about this task would be a value added tax. Here we would like to present some points which are centralized for the cause of appearance of VAT.

1. **Eliminates Cascading Effect :** VAT is only a mechanism which scraps the distortions and eliminates cascading (tax on tax) effect due to the system of deduction or tax credit mechanism.
2. **Eases Administration :** It enables the administration for easy collection that checks evasion through a self monitoring system and also maintains account based audit system which not only

3. **Improves International Competitiveness** : With the introduction of VAT system it is possible to design a manner which will ensure that exports are free from any tax burden (zero rating). Alternatively such adjustments under this system are also WTO consistent.

4. **Imparts Transparency** : The most powerful and positive aspect of the VAT mechanism is its simplicity and transparency. Both producers and consumers, who ultimately bear the tax burden, are fully aware of the tax liability, which is not as easily ascertainable in other forms of commodity taxation.

5. **Buoyant Source of Revenue** : VAT is only source of revenue which permits a larger coverage as much as it is possible to extend its value addition at all stages in the production-distribution chain.

## III. A COMPARISON WITH PRESENT TAX SYSTEM

### Present Position

Although the present sales tax system garners an account of 60 percent of the total tax revenue of the state, overtime the regime of present structures in the state faces the following basic problems.

Firstly, it is a first point tax on the manufacturer and importer which leads to discrimination amongst goods as it excludes the value addition at the subsequent stages of trade, from the taxable base. Alternatively it gives birth to cascading, excess burden and distortions in economic decisions.

In the second, the state can levy a tax only on a few specified services like luxuries, entertainment and on goods and passengers carried by road and inland waterways. Thus it has been a source of acute problem in taxing even the sale of goods which takes place as an integral part of providing service.

Thirdly, no common treatment for everything leads to confusion and litigations.

Last but not the least the present tax system faces wide divergence in structures, multiplicity of levies, rates among the commodities, lack of information sharing among states, absence of coordination which in

## IV. SOME APPREHENSIONS

At present there is a general agreement among the planners, economists and experts on desirability of levying VAT at state level. But this agreement is still under discussion which is explained below :

At first, change to VAT means (a) change the way we collect the tax and (b) change the concept "don't change sales tax on certain transactions" to "change sales tax on all transactions, but refund (set off) the tax already charged to the purchaser" so ultimately there will be no much gain to the economy levying VAT.

Secondly, change over to VAT will have no change (marginal only) on revenue collection and no effect on trade revenue of other states because VAT means only a change the way we collect sales tax.

Thirdly, change over to VAT will not abolish central sales tax and will not dispense with requirement of central statutory forms.

Fourthly, change over to VAT will not by itself prevent/stop unaccounted trade happening at different levels.

Fifthly, the main dissent is on the possibility of revenue loss and the possible welfare loss if it creates distortions between the formal and informal sectors and prevents the formalization of the economy [Erman and Stiglitz, 2004].

Sixthly, it is agreed that in an economy with a large informal sector, the entire chain of transaction may escape the tax net, resulting in revenue losses. It is also argued that in a developing economy, the levy of VAT would shift resources away from the formal to the informal sector thus lowering GDP.

Lastly, in the context of Indian economy, the proposed VAT is supposed to replace cascading type, complex and predominantly first point sales tax. But the narrow base of the tax, multiple rates often determined by political reasons or inter-state competition rather than economic rationale, taxation on inputs and capital goods, widespread regime of tax incentives and the large scope for tax erosion due to single point tax system all these make the tax not only virtually voluntary and negotiated but also highly distorting.

## V. CONCLUSIONS AND REMARKS

The introduction of VAT, instead of conventional sales tax system,

state government to earn more revenue once the initial phase of uncertainty passes. No doubt, there is possibility of revenue loss in the initial years. To cover up the initial revenue loss financial protection should be given by the centre to the states. Every state should have minimum common features on VAT so that there will be increase in revenue buoyancy as the coverage expands to value addition at all stages of production and distribution chain.

Thus the type of VAT we are going to introduce in India is a fractured VAT for attaining the benefit of neutrality and anti-cascading but at the same time keeping scope for possibility of rampant erosion in the form of taking false input credit with bogus invoices. But at this juncture there cannot be any other choice than VAT. Rather VAT should be best introduced in a meaningful manner throughout the country.

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# VAT in India – An Economic Analysis

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This paper analyses the objectives, variants and prospects of VAT in India and its impact on Indian economy.

There has been a lot of controversy with regard to imposition of VAT in India since last couple of years. VAT would replace the present sales tax system for the levy of tax on sales of goods. Initially it was decided to shift to the new system of VAT from April 1, 2001. As all the states were not uniformly ready for its implementation, the decision had to be deferred as many as five times. Now, after rigorous debate and discussion, all the states except a few have agreed to introduce it in the entire country with effect from April 2005.

The origin of VAT can be traced as far back as 1921 when F. Van Siemans proposed it as a substitute for then newly established German turn over tax. In 1954 France became the first European country to adopt VAT which largely paved the way for its acceptance as a common market tax. Subsequently it was introduced by Brazil in 1967 and now it has been widely accepted and acknowledged by more than 120 countries all over the world as the best method of commodity taxation. 75% of the people of the world belong to VAT payable category. It raises above 18 trillion dollar in tax revenue accounting for roughly one-fourth, of all government revenue.

The concept of VAT was developed to overcome the difficulties in conventional system of commodity tax. It is nothing but a multi-point sales tax which is only payable on value added. VAT works on the principle that raw material passes through various manufacturing stages; tax may be levied on the value-added at each stage and not on the gross sales price. This ensures that the same commodity does not get taxed again and again and there is no cascading effect. In simple terms value-added means difference between selling price and purchase price. Basically VAT is a multi-point tax with provision of granting set off (credit) of the tax paid at the earlier stage. Thus tax burden is passed

when goods are sold. This process continues till goods are finally consumed. VAT being termed as consumption type tax works on the basis of tax credit system.

**How Does It Work?**

Let us assume that the tax on a produce is 10% of selling price. Under usual system of taxation, Manufacturer 'A' supplies his output to 'B' at Rs.100. Thus 'B' gets the material at Rs. 110 inclusive of tax @ 10%. He carries out further processing and sells his output to 'C' at Rs. 150. While calculating his cost, 'B' has considered the purchase cost of materials as Rs. 110 and added Rs. 40 as his conversion charges. While selling product to 'C', 'B', will charge tax again @10%. Thus 'C' will get the item at Rs. 165{150+10%tax}.

Under VAT system 'B' will purchase goods from 'A' @Rs 110, which is inclusive of duty of Rs.10. Since 'B' is going to get credit of duty of Rs. 10, he will not consider this amount for his costing. He will charge conversion charges of Rs. 40 and sell his goods at Rs. 140. He will charge 10% tax and raise invoice of Rs. 154 to 'C' [140+tax@10%}. In the invoice prepared by 'B' the duty shown will be Rs. 14. However 'B' will get credit of Rs. 10 paid on the raw materials purchased by him from 'A'. Thus effective duty paid by 'B' will be only Rs.4. 'C' will get the goods at Rs.154 and not at Rs.165 which he would have got in absence of VAT. Thus in effect 'B' has to pay duty only on value-added by him.

**Following example will illustrate the tax credit method of VAT.**

| Details | Transaction without VAT | | Transaction with VAT | |
|---|---|---|---|---|
| | A | B | A | B |
| Purchases | - | 110 | - | 100 |
| Value Added | 100 | 40 | 100 | 40 |
| Sub-Total | 100 | 150 | 100 | 140 |
| Add tax 10% | 10 | 15 | 10 | 14 |
| **Total** | **100** | **165** | **110** | **154** |

**Note** : 'B' is purchasing goods from 'A' in second case. His

i.e., tax paid on purchases. His invoice shows tax paid as Rs.14. However, since he has got credit of Rs.10/-, effectively he is paying only Rs.4/- as tax which is 10% of Rs.40/-, i.e., 10% of value added by him.

**VARIANTS OF VAT :** There are four types of VAT.

1. Product Type : In this case only purchase cost of raw materials is allowed as deduction from sales. No deduction is allowed in capital expenditure and this encourages tax avoidance by classifying capital & revenue expenditure. The limitation of this type of VAT is that capital goods carry a heavier tax burden as they are taxed twice.
2. Income Type : Here both purchase cost of raw materials & depreciation will be allowed as deduction from sales.
3. Wage Type : It belongs to capital expenditure of value-added tax. It exempts either income from or value-added in producing the capital goods. The important limitation of this type of VAT is that labour value has to bear the entire burden of tax because of its regressivity.
4. Consumption Type : In this case all business purchases including capital items are deducted in order to determine value-added. Basically VAT is termed as consumption type which is very popular & adopted by most of the countries due to following reasons.

a. Administrative control is easy due to credit method that can be adopted.

b. It makes no distinction between capital intensive and labour intensive activities.

c. Tax avoidance by classifying capital goods purchases as revenue purchase is avoided.

d. It is in harmony with the destination principle.

e. It simplifies tax administration as there is no need to distinguish

The main advantage of consumption type VAT is that tax burden is only at the last consumption stage. This is useful for consumption structure based on destination principle. At all the earlier stages of production there is no tax burden in view of the credit obtained when the inputs are used for production of final product. Thus it becomes easier to give concession to goods used by manufacture of capital goods or exported goods & charge heavy duty on luxury goods.

The introduction of VAT system of taxation is welcome, replacing the conventional sales tax system in all states in India. VAT is a unique system which maintains the principles of justice and equity in an economy. It captures all parameters of income. Adoption of VAT would not only help in avoiding the cascading effects of indirect taxation, it would also help in reducing tax evasion. As against the existing system of administration of sales tax, VAT system needs that tax accounts must be maintained by the dealers with a view to enjoying the benefit of tax deduction. It also enables the tax officials to cross-check the declared transaction between tax payers, consequently reducing the propensity to evade tax & thus resulting in higher tax compliance. VAT is very self contained code of comprehensive taxation. All forms of income are coming under the purview of VAT system. But it is apprehended that there may be loss of revenue to the states in the initial year. Therefore central government has taken up a strategy of making Rs. 7000 million funds meant for VAT compensation for replenishment of revenue loss to the states - 100% in the first year, 75% in the second year and 50% in the third year.

Currently only a small fraction of India's one billion population pays income tax. Over 550 items will be covered under new tax regime of which 46 natural and unprocessed local product would be exempted from VAT. Under the system, two rates of 4.0%, & 12.5% will be applied. The low rate of 4% will be levied on key products such as medicines, drugs, agricultural and industrial goods. The 12.5% rate will be applied to the rest of the goods sold in India Products including petrol, diesel, aviation, turbine, fuel, liquor, lottery tickets will be exempted from VAT. Precious metals like gold and bullion would be [illegible] 1%. These items, sugar, textile and tobacco under additional

excise duties will not come under VAT regime for one year & instead the existing arrangement would continue.

By reducing the attractiveness of tax avoidance VAT can potentially increase tax revenue. Perhaps the biggest benefit of VAT is that it could unite India into a large common market. This will translate to better business policy. Lorries need not wait at check-post for days, they can zoom down highways to their destinations. Reduced transit times & lower inventory levels will boost corporate earnings. Besides, under VAT regime, the economy will be able to attract more and honest manufactures of commodities to boost up the volume of exports. The introduction of VAT will neutralize the effects of inflationary spiraling effects by creating the entrepreneurs-cum-investors-friendly social climate in the country, thereby accelerating the pace of economic growth and development. Across the world, VAT is proved to be extremely beneficial to consumers, tax payers and the government. Consumers will have to pay less tax, while the incentives to pay will boost compliance and cut down black money. The present regime of excise duties and sales tax imposes a levy on inputs at every stage of the production cycle. VAT avoids this cascading effect by charging tax only on the value added at each level of production. The best example is that of Haryana. In little over a year, its revenues shot up by about 30%.

The imposition of VAT system is pragmatic to the largest possible extent. It is befitting in the socialistic pattern of society. Under the VAT regime both poor and rich class people will come under the tax net; tax honesty increases to the expected level of tax collection; tendency to hide taxable revenue is almost impossible under the pressure of competitive scale of production and the principle of marketing strategies. The principal criticism of the VAT is that if each state were to set up its own rates of value-added taxation, the Indian businessmen would have to navigate through 28 state laws and applicable rules. Prices of many commodities including those of daily use would increase. Flexibility given to states in certain matters would lead to disparities among various state VAT laws. Besides, it is mainly a paper based

and will increase paper work. So there is need to have an IT system like Tax Information Network, merging all goods and services, where all transactions will be recorded in one central data base.

Moreover, VAT in its pure form cannot be introduced in India due to federal structure of government. VAT in its pure form works best where there is one taxing authority. Hence it is not the best form of consumption tax especially in a developing economy. An imperfect VAT would not achieve the purpose for which VAT is being introduced. Since it is not suited for Indian federalism, a better choice would be to have a combination of reformed CENVAT, retail sales tax with uniformity in structure and rates in all states and reduction in exemption & elimination of CST in its present form would be desirable for the integration of domestic market into one integrated market. In Indian situation, the success of VAT depends on the political will and strength of the Government along with the wholehearted cooperation of consumers, traders, and the common mass.

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# Rationale for Value Added Tax in India.

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## INTRODUCTION

The move towards a state value Added tax has been in work for many years in India. S.Bhoota Lingam, the author of the "Final Report on Rationalisation and Simplification of the tax structure" (1960), has advocated the introduction of GED (General Excise duty) having a tax base as the value of production minus the value of all mate ials purchased for production. The replacement of existing excise taxes by stages by a MANAVAT (Manufactured value added tax) was mooted by L.K. Jha. The pace of economic reforms accelerated in developing countries in the 1970's and 1980's to make the tax system simpler, equitable, more efficient, elastic, transparent, broad based and less distorting. The resultant wave of tax reforms brought out two important policy paradigms in India, one was the philosophy of moderate tax rates with a broader base to encourage savings and private sector economic activity and the other was replacement of commodity taxes like excise and sales taxes by a comprehensive value added tax. The introduction of MODVAT by Government of India in 1986 was an extension of proforma credit to all commodities barring a few like petroleum, tobacco and textiles with the provision of instant and complete reimbursement.

VAT is considered to be the most important innovation of the twentieth century. The tax was advocated by Carl C. Shoup, as an alternative to corporate tax in his report known as the Tax Reform in Japan (1948). The Tax, which was introduced in Michigan state of United States in the name of "Business Activities Tax" in 1948, was adopted by France in 1954 and the member countries of E.E.C. have replaced the "Turn over" Tax by V.A.T. Today, the tax is popular in 230 countries of the world and Australia and U.S.A. have abolished the tax. In India,

Harayana, Maharasthra, Andhra Pradesh, Madhya Pradesh and Karnataka and states like Tamil Nadu and Himachal Pradesh have not yet enacted legislations for introducing V.A.T.

**Concept of VAT**

In the words of Prof. C.Shoup " the value added tax is imposed on the goods and services that it purchases from other firms. It adds value by processing or handling these purchased items with its own labour force and its own machinery, buildings or other capital goods. It then sells resulting product to consumers or to other firms. The difference between the sales proceeds and cost of the materials is the tax base of the value added tax."

Sales tax is a tax imposed on the total value of goods being sold. VAT is a tax on the value added at different stages of transaction. The base of VAT is not on the gross value of the retail sale but rather than the net value added to each stage of production. Sales tax may be a single levy or multi-point levy but VAT is always a multipoint levy.

**Types of VAT**

**a) Production type of VAT**

The base of the tax for any firm will be sales – the cost of non-capital material goods. The value of capital goods like building and furniture not used entirely in the same year is not deducted from the total sale value of the firm. In a closed economy. It will be a tax on G.N.P. denoted by total value minus the cost of non-capital inputs.

GNP = Consumption (C) + Investment (I) = Wage (W) + Net profit (P) + Depreciation (D)

**b) Consumption type of VAT**

In this type of VAT which is prevalent among the European countries, non-capital inputs and the value of capital inputs purchased are deducted from the sale value of products of the firm to arrive at the base of the tax.

In a closed economy G.N.P. (Gross National Product) = C+ 1 (Consumption + Investment) = Factor Payments (Wage + Profit +

### c) Wage type of VAT

Wage constitutes the base of the tax and the tax base is arrived at by deducting net earnings of capital from the total sales. Net earnings of capital amounts to profits plus interest and so the balance is subject to tax.

Net earnings of the firm = Gross earnings minus Depreciation.

Gross earning is $C + I = W + P + D$

Net earning is $C + I - D = W + P$

So $W = C + I - D - P$.

## CASE FOR VAT

It needs recognition that, VAT has not been experimented within a federal system of government. It has succeeded in the unitary form of government and in countries of smaller size. Around the world, the VAT is the highest in Ireland 25% and the lowest in Honduras (05%).

### (i) Impetus to investment

It seems that, VAT may stimulate investment by allowing for deduction for the tax paid on inputs of capital goods. Further, the exports of the economy may register an increase, since VAT may not raise costs much, as is the case with a sales tax.

### (ii) Little chance for tax evasion

A logical point can be that, under VAT, every transaction of purchase & sale will be accompanied by receipts and invoices leaving very little chance for tax evasion. As under VAT, the tax now evaded will be checked, hence with comparable rates, VAT may yield higher revenue. There is a wealth of wisdom in the argument that, VAT has a wider coverage than sales tax, as services come under VAT umbrella. It is little wonder that, the Tax Reforms Committee (1991) has recommended the extension of MODVAT into a full fledged VAT including services.

### (iii) Reduction in the burden on consumers

Chidambaram contends in his address at a national conference on "State VAT for India, Common Market" organised by the Madras Chamber of Commerce & Industry and Assocham on December 30,

once. The provision of refunding the amount of VAT already paid at earlier stage may avoid double counting. Prices will decline for consumers while demand and production will increase for manufacturers.

**Neutrality in allocation of resources**

One feather to the cap of VAT is its superiority to sales tax on grounds of neutrality. It is neutral between goods & services. Consumers are best judges of what to consume & what not to consume. The sales and excise taxes draw demarcation line between personal income and corporate income which the VAT does not. Moreover, imported commodities and indigenous commodities, favour intensive schemes and capital intensive schemes are indifferent before VAT.

**Checks cascading effect**

One line of thinking states that, sales taxes which fall both on final products and inputs, which are used in their manufacture leads to multiple tax. As Keynean E.Poole reasons 'Pyramiding, that is inclusion of the tax in the base of a subsequent mark up' is serious under a multi-point sales tax. The snowballing effect, known as cascading effect brings about escalation of production costs, distortions, loss of competitiveness, vertical integration and uncontrolled pattern of incidence. To quote Due "Pyramiding will be less than with pre-retail taxes and will perhaps be avoided because the tax credit technique involves separation of tax from selling price at each transaction."

**Simplicity**

There is general agreement that, VAT is in conformity with the principle of simplicity, advocated by the Tax Reforms Committee. The VAT which is levied on advalorum base is simple to understand and easy to operate. It appears that VAT which does not exempt a firm from tax liability, may provide the impetus to the firm to improve performance by reducing costs.

**Tax harmonisation**

Tax harmonisation covers vertical as well as horizontal tax structure, which indicates harmonisation of tax rates, exemptions, administrative procedures and additional tax revenue target of the union and the state governments. The union government has been levying excise duties on goods produced, which are added to their prices. In

order to achieve tax harmonisation, the rate structure & exemptions of commodity taxation of the Union and the State Governments may be pushed towards required uniformity, if not towards complete equality. It took ten years for E.E.C. to evolve a uniform basis of VAT assessment.

## DEMERITS OF VAT

Numerous studies in VAT countries indicate that, VAT is not a useful instrument to fight regressivity. Dong Kun Kin found in case of Korea that, after introduction of VAT the burden of indirect taxes on income ranged from 17.66% at the lowest income decile to 9.65% in the highest income decile.

It entails higher costs of collection. After the introduction of VAT, the number of collecting points increased and a large number of officials were appointed to run the system in U.K.

In theory, VAT is a single point, uniform rate tax without any exemption, but in practice, it has got to be a multiple rate tax with exemption to certain sectors. So, it follows that VAT is not a perfectly neutral tax.

One dark spot in the body of VAT is that it requires elaborate book keeping. Introduction of such a tax forces firm owners or traders to maintain elaborate and costly accounts. So, it puts additional strain and expenditure on the part of small traders to maintain such accounts.

The tax is non-neutral in allocative and distributive effect. But the realities of income and wealth disparities, non-competitive market and the necessity of accelerating the pace of capital formation for less developed countries will make the tax selective in coverage at differential rate. Exceptions and exemptions have to be introduced into the structure of the tax.

## Impact of MODAVAT on price

It was argued by Raja Chellia Committee that, a reduction in costs of production upto 5% is a natural corollary of the automatic input duty adjustment under MODVAT Scheme. The governments stand was that MODVAT provides for a set off for the duty paid on inputs and this may lead to decrease in prices of commodities under MODVAT.

Let us analyse the impact of MODVAT on the price level in India

went up by 4.8%. In the post MODVAT years, wholesale prices went up by 5.1% in 1986-87, by 10.7% in 87-88, by 5.7% in 1988-89,7% in 1989-90, by 12% in 1990-91, by 13.6% in 1991-92, by 9.1 % in 1992-93, by 8.2% in 1993-94, by 11.0% in 1994-95.

## SUMMARY AND CONCLUSION

The White Paper on VAT laid down a road map for 'a uniform state level tax' on over 50 items, exempts 46 local and social items and gives states an option to exempt food grains for a year. The new tax regime would cover more than 550 items, of which 46 natural and unprocessed local products would be exempt from VAT. Defence and strategic goods would attract zero per cent VAT, while about 270 items including drug and medicines, all agricultural and industrial inputs and capital goods would attract 4 per cent VAT. VAT would replace the sales tax regime in states with a two-tax regime of 4 and 12.5% VAT barring Uttar Pradesh. Remaining items would attract 12.5% VAT. Precious metals like gold and bullion would be taxed at 1 per cent. Petroleum and diesel would be kept off VAT regime. States would get 100 per cent revenue loss, if any, in the first year, while 75 per cent of the loss would be compensated in the second year and 50 per cent in the third year.

The prospective advantages of VAT may not be obtained, if the tax is not administrated properly or if expected tax compliance is not forthcoming. As noted by Don Kun Kin the success of VAT depends upon external factors, like the size of monetary economy, degree of literacy, the adequacy of book keeping, the attitude towards taxation and the efficiency of tax administration and internal factors like the degree of complexity in terms of rate structure and the treatment of small business.

Presumably, some states may have border check posts. This may create many markets in India instead of making it to a single market. The current tax system has discrepancies relating to the existence of two rates, proper treatment of imports and optimal size of VAT and these gaps should be filled in by rational planning based on vision, pragmatism and insight into the working of an economy.

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# Vitalizing the Sales Tax System Through VAT : An Overview

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Liberalization has compelled reforms in every sphere including the taxation. A paradigm shift towards a uniform tax regime nation-wide from 1st April 2005, envisages an indirect tax system, which is supposed to be simple, equitable, moderate, rational and easy to administer. The new system of sales taxation emerging to succeed the law (the Central Sales Tax Act 1956) in vogue, for about 60 years and proposed to retire in a phased manner, is Value Added Tax, popular as VAT. It is perceived by many as a means to promote uniformity as well as neutrality of tax burden and to expedite productivity and industrialization.

An attempt has been made in this paper to focus on the concept of VAT, its implementation mechanism, and challenges encompassing this dream project.

## GENESIS OF VAT :

A full fledged VAT was initiated first in Brazil in mid 1960s, then in European countries in 1970s and subsequently introduced in about 130 countries including several federal countries. In Asia it has been introduced by Govt. of India for about last ten years in respect of Central Excise Duties. Steps were initiated long ago for systematic preparation for the introduction of State level VAT. In order to avoid any unhealthy competition among the States which may lead to distortions in manufacturing and trade, attempts have been made to harmonise the VAT design in the states, keeping in view the distinctive features of each State and the need for federal flexibility.

## CONCEPT OF VAT :

VAT is a simple transparent tax collected on the sale of goods.

chain, with a provision to allow input tax credit on tax paid at an earlier stage, which can be appropriated against the VAT liability on subsequent sale.

VAT is intended to tax every stage of sale where some value is added to the product and can aptly be defined as one of the ideal forms of consumption taxation since the value added by a firm represents the difference between its receipts and cost of purchased inputs.

The essence of VAT is in providing set-off for the tax paid earlier and this is given effect through the concept of input tax credit/rebate. This input tax credit at any point of time is setting off the amount of input tax by a registered dealer against the amount of his output tax. The liability of VAT which is based on the value addition to the goods of the dealer is calculated by deducting input tax credit from tax collected on sales. If for example :– Input worth Rs.10,000/- is purchased and sales are worth Rs.20,000/- in a month and input tax rate and output tax rates are 5% and 10% respectively, then input tax credit is set-off and calculation of VAT will be as follows–

a) Input purchased within 1 month = Rs.10,000/-

b) Input tax paid is 5% of Rs.10,000/- = Rs.500/-

c) Output sold in one month = Rs.20,000/-

Output tax payable = 10% of Rs.20,000/- = Rs.2,000/-

VAT payable during the month = Rs.2,000/- Rs.500/- = Rs.1,500/- after input tax credit.

**WHY VAT :**

In the existing sales tax structure there are problems of double taxation of commodities and multiplicity of taxes resulting in a cascading tax burden. For instance, in the existing tax structure before a commodity is produced, inputs are first taxed and then after the commodity is produced with input tax load output is taxed again. This causes an unfair double taxation with cascading effects. In the VAT a set-off is given for input tax as well as tax paid on previous purchases. With introduction of VAT, the other multiple taxes will be abolished and Central Sales Tax is also going to be phased out. As a result overall tax burden will

VAT will replace the existing system of inspection by a system of built-in self assessment by dealers and auditing. The tax structure will become simple and more transparent.

This will also improve tax compliance and augment revenue growth.

VAT will therefore help common people, traders, industrialists and also the Government. It is indeed a move towards more efficiency, fair competition and neutrality in the taxation system.

## OBJECTIVES OF VAT :

The primary objective of VAT system is progressiveness and competitiveness in Indian Industry by removing the cascading effect of various taxes and levies and removal of the prevalent multiple taxes.

**The other objectives constitute :**

- Creation of a unified market by removal of the barriers to inter-state trade and commerce.
- Simplicity and transparency in the tax administration.
- Consistency in structure and approach.
- Revenue neutrality in the long run.
- Self regulated mechanism.

## BASIC ELEMENTS OF VAT :

- VAT is an indirect tax on consumption.
- It is charged and collected at each stage of production/ processing/trading, on the value added on the goods sold.
- It contemplates rebating of tax paid on inputs and capital goods.
- It requires maintenance of accounts of tax paid on purchases and sales.
- In VAT the tax component in any transaction is identifiable/ computable.

## IMPLEMENTATION OF VAT :

Somewhere in the mid 1980s, the Government of India, discovered VAT. It was found that 70 per cent of world population were covered by VAT and a noticeable hike of total tax revenue by 27% was observed.

In the conference of all Chief Ministers convened by Union Finance Minister on 16th November 1999 a decision was taken for the implementation of Minimum Floor Rate (MFR) of Sales Tax in the country. To monitor the decision an Empowered Committee comprising nine state Finance Ministers was constituted. It is decided to rationalize the future rate structure under VAT to 5 rates :

- NIL rate for essential commodities.
- 1% for gold, silver and precious stones.
- 4% for declared goods and industrial inputs.
- 20% for liquor and some petroleum products.
- Revenue Neutral Rate (RNR) 12.5% for all other goods.

The following transactions have been declared zero rated under VAT in our country.

- Sales in course of inter State trade or commerce.
- Sales in course of export out of the territory of India.
- Sales to a dealer having business under
  a) SEZ (Special Economic Zone)
  b) STP (Software Technology Park)
  c) EHTP (Electronic Hardware Technology Park)
  d) EOU (Export Oriented Unit)

Though apparently, zero rating looks similar to an exempt transaction, there is significant difference.

Obstacles from different quarters have delayed the implementation process and Haryana is the only state to implement VAT from April 2003. April 2005 is the deadline for a nation-wide VAT regime.

All business transactions carried on within a state by individuals, partnerships, companies etc. will be covered by VAT. However VAT will not cover small business with a turnover below a certain limit which will be decided by each State.

Most business purchases will carry a VAT charge. VAT paid as input tax can be adjusted against VAT on output. This will include VAT paid on purchases of raw materials or goods purchased for resale. The

It is expected that Uniform Rates of VAT will boost fair trade. 100% self assessment will reduce the tax payer's need to visit the offices of the Tax Department. It should not lead to a price rise also as there will be no tax on tax.

**TRUST FACTOR :**

The entire design of VAT with input tax credit is crucially based on documentation of tax invoice, cash memo or bill. Every registered dealer, having turnover of sales above an amount specified, shall issue to the purchaser serially numbered tax invoice with the prescribed particulars. This tax invoice will be signed and dated by the dealer showing the required particulars. The dealer shall keep a counter foil or duplicate of such tax invoice duly signed and dated. Failure to comply with the above, will attract penalty. In the case of false invoice, the selling dealer shall pay the tax and penalty twice the amount of tax. However floating of VAT aims at creation of an atmosphere of mutual trust "I trust you, you trust me".

**AUDIT :**

Correctness of self-assessment will be checked through a system of Departmental Audit, which will remain delinked from tax collection wing to avoid any bias. A certain percentage of the dealers will be taken up for audit every year. If any evasion is detected on audit, the concerned dealer may be taken up for audit of documents of previous periods. The audit team will conduct its work in a time bound manner and it will be completed within 6 months. The audit report will be transparently sent to the dealer also. Simultaneously a cross-checking computer system is being worked out on the basis of co-ordination between the tax authorities of the State Government and the authorities of Central Excise and Income Tax to compare constantly the tax return and set-off documents of VAT system of the states and those of Central Excise & Income Tax. This comprehensive cross checking system will help to reduce tax evasion and also lead to significant growth of tax revenue. At the same time, protecting transparently the interests of tax-complying dealers against unfair practices of tax evaders, the system will also bring in more equal competition in the sphere of trade and

## CHALLENGES AHEAD :

1. The basic challenge for implementation of VAT is the economic disparity among states. Some states are high production and low consumption ones, whereas some states are of high consumption and relatively low production category. Under the VAT system the largest chunk of taxes will be enjoyed where the value addition is maximum. So this will have an impact on the states like Orissa, Bihar, U.P.
2. Our country has a large informal economy, a large number of transactions are not invoiced. Under VAT, the need of production of invoices for all transactions may be difficult.
3. To attain uniformity some States stand as stumbling blocks because of non-preparation of draft laws. The applicable rules are not ready in all the states. In such a black hole, the apprehensions about the law is understandable.

## CONCLUSION

What we may actually have as regards VAT in April 2005 ? The answer is an implementation, at the same time, by all the states. The Legislation and the rules and regulations should be the same across all the states. There is a need to maintain a monitoring mechanism to prevent unilateral changes in VAT Laws after its introduction. To ensure VAT compatibility relative changes in IT and Company Law are also required. In the absence of a common market the proposed economic efficiency may not be reaped. It is very difficult to be simple, so will be the experience of VAT implementation. Bust these sophisticated VAT tools will rule for macro benefits and as the effect of global currents.

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# VAT and Federal Finance

## – Emerging Issues –

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### INTRODUCTION :

It has been argued that the institutions of intergovernmental relations have generated perverse incentive and fiscal indiscipline among states (Anand, Bagchi and Sen 2001). The vertical imbalance which exists in Indian federal structure go further exacerbated as Indian economy opened up and increasingly depended on market based rules administered by central bank. Before the economic reforms, the statutory institution of Finance Commission attempted to reduce the vertical imbalance and horizontal disparities. Apart from reforming the transfer system it is important to plug the vertical gap by assignment of tax power to state. This would reduce the burden placed on transfer system. It is accepted that the competition among states to give incentive for industrialization has resulted in a "race to the bottom". One of the reasons for states' inability to improve their own tax collection as percentage of GDP is that they have already mortgaged future tax revenues with the 89th Amendment to the Constitution. The revenue from the central tax on service is also becoming available for sharing of tax and services have been allowed to be taxed by states as well. With the production and consumption of services coming within the tax net the buoyancy in states' taxes as well as expansion of tax base will get improved as states will be able to levy VAT on services.

### Rationale of Implementation of VAT :

at the centre and the states, VAT is simple, transparent and rule based tax system. There will be no cascading effect (tax on tax) under VAT. It will be extremely difficult to bypass the Tax chain. One need not shed tears for tax evaders. VAT will benefit those who choose to abide by the law. It aimed at evolving a rational commodity taxation structure and developing a common market in the Indian Federation. It seeks to simplify State-level commodity taxation by subsuming a plethora of existing state taxes like sales tax, turn over tax, purchase tax etc. The right to impose sales tax has been granted to states under article 246 of the Constitution. Dr. Ashok Mitra, former State Finance Minister said sales tax had been the holy calf or major source of revenue for states and proposed VAT will weaken the economic position of states and give rise to serious political and social problems. He also held that the proposed uniform rate of tax all over the country for each and every commodity was "absurd and impracticable". To suggest that the state governments will not have any power to regulate the rate of tax on a commodity produced or traded within its territory is against the spirit of "Indian Federalism". Mr. Chidambaram pointed out that state-level VAT is the "most important tax reform so far in independent India". It goes without saying that VAT is an experiment with co-operative Federalism. He reiterated that the centre would compensate states for revenue loss on account of introduction of VAT. The states would be compensated for 100% of the loss in the first year of VAT, 75% of the loss in the second year and 50% of the loss in the third year. Besides, the compensation package the centre would support the new regime with a computerized information net work as well as technical inputs to resolve problems that might arise from time to time.

Uttar Pradesh has some ground level problems and VAT will not be implemented on 1st April 2005, in the state. The white paper released aims at collective attempt of the state to strike a balance between the needed commodity and desired federal flexibility in the VAT structure. It also strikes a balance between what is possible in the VAT design to begin with and what can be improved upon in subsequent years.

In the existing sales tax structure, there are problems of double taxation of commodities and multiplicity of taxes resulting in cascading

tax burden. For example, in the existing structure, before a commodity is produced, inputs are first taxed and then after the commodity is produced with input tax load, output is taxed again. This causes an unfair double taxation with cascading effect. In prevailing sales tax structure in states there are multiple taxes such as turn over tax, surcharge on sales tax, additional surcharge etc. With the introduction of VAT, these other taxes will be abolished.

In addition to this, central sales tax is going to be phased out. As a result of this the overall tax burden will be rationalized, and prices will fall. Moreover, VAT will replace the existing system of inspection by a system of built-in self assessment by the dealers. The tax structure will become simple and more transparent. This will improve tax compliance and augment revenue growth. It will help common people, traders and industrialists and will bring more efficiency, equal competition and fairness in tax system.

Goods covered under VAT will get the benefit of input Tax Credit. Goods outside VAT will be liquor, lottery, petrol, diesel and motor spirit. Under VAT system, 550 goods will be covered and there will be two basic VAT rules of 4% and 12.5% plus a special category of tax exempted goods and special VAT rate of 1% only for gold and silver ornaments. As a matter of fact, the management information system required to implement the VAT would make tax avoidance difficult and there is an inbuilt incentive for tax compliance. It will be beneficial for the Govt. as well as for honest tax payers. India, like other federal governments, would face difficulties in harmonizing tax on inter-state trade while implementing VAT, but these complexities are not insurmountable. The main reason is that user charges and property tax usually preferred for financing local governments are difficult to implement and are not able to fill the fiscal gap where major spending responsibilities of local governments are in social areas such as drinking water, health and education (Bird 2000). With restructuring of indirect finance, implementation of VAT can expand the tax base further. An expanding tax base in the medium term at the state and local government level would reduce the burden placed on federal transfer to provide resources to meet expenditure needs of social as well as economic

## CONCLUSION :

It goes without saying that the success of VAT depends on mindset and sincerity of the state Govt. machinery. For successful implementation of state-level VAT, close interaction with trade and industry is important. For example, Haryana has already introduced VAT on its own with good results on revenue growth. The states can reduce revenue deficit with that of Central Govt. by making committed expenditure free from economic growth cycle.

Incentive based transfer to sector specific and project specific fields is required to improve productivity of capital expenditure. The main issues in restructuring of public finance are implementation of VAT, rethinking on the role of resources and mechanism of transfer to states for their capital expenditure. Proper record keeping is essential for success of VAT.

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# Value Added Tax, Its Impact on The Central and State Finance

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The origin of Value Added Tax (VAT) can be traced back to the writings of F.Von Siemens who proposed it in 1918 as a substitute for the newly established German turnover tax. However, for its rejuvenation the tax owes much to Maurice Faure and Carl Shoup. The recent evolution of VAT can be considered as the unique fiscal innovation when it was first introduced in France in 1954. It was a full blown consumption type VAT on the industrial sector where all investment expenditures were fully deducted.

VAT implies a tax on value added to a commodity or service paid at each stage where there is addition to a product with the deduction of tax paid at earlier level. It aims at dispensing with the cascading effect. At present a raw material supplier pays a two to four per cent tax before he sells it to the manufacturer. The manufacturer then adds value to it by making it a product. In that process he pays sales tax on all the raw materials he uses to manufacture the product and adds his profit to it. Then the product goes to the wholesaler who does not pay tax on it, but adds his margin and sells it to the retailer. The retailer does not pay any sales tax but adds his own margin and sells the product to the consumer. The consumer pays the tax for every level of input plus margin of the manufacturer, wholesaler and the retailer.

**A Taxonomy of VAT :** Value Added Tax is multistage sales tax levied as a proportion of the value added i.e. sales minus purchases which is equivalent to wages plus profit. To illustrate let us assume

dealer A to be producer, B to be manufacturer, C to be wholesaler and D to be retailer. Dealer A sells his product at Rs.100/- and pays tax at 10%. As dealer A is a producer of primary product his inputs assumed to be zero. The sale price of Rs.100/- would be the purchase price of dealer B who is a manufacturer. This dealer would use wages, salaries other manufacturing expenses and he would add interest and his own profit and suppose he sells at Rs.200/-. On this sales price the gross tax (at 10%) would be Rs.20/-. As dealer A has already paid tax on Rs.100/-, dealer B would get credit for this tax. Thus his net VAT liability would be Rs.20/- minus Rs.10/-. Now dealer B would pay Rs.10/- (Rs.30 – Rs.20) and the sale price Rs.400/- by dealer D would also have VAT liability of Rs. 10/- (Rs.40 – Rs.30). It indicates that VAT is collected at each stage of production and distribution process and ultimately its burden falls on consumers only. Thus it is added of each commodity by a firm during all stages of production and distribution.

VAT could be levied with three specific variants viz. (a) Gross product variant, (b) Income type variant and (c) Consumption type variant. These variants can be distinguished through their methods of computation viz. addition method and subtraction method. Subtraction method can be classified into direct, intermediate and indirect subtraction method.

Gross product variant allows deductions for all purchases of raw materials and components but no deductions is allowed for business inputs. Capital goods such as plant and machinery are not deductible from the tax base in the year of purchase and depreciation on the plant and machinery is not deductible in the subsequent years. Thus the economic base of gross product variant is equivalent to GNP.

Income variant of VAT allows deductions for purchase of raw materials and components as well as depreciation on capital goods.

Consumption variant of VAT allows deduction for all business purchases including capital assets. Thus gross investment is deductible in computing value added. The economic base of tax is equivalent to total private consumption. This consumption variant is convenient from the point of administrative expediency as it simplifies tax administration

VAT can be computed by (a) addition method, (b) subtraction method, (c) tax credit method. Identification of value added can be done by summation of all the elements of value added i.e. wages, profit, rent and interest. This method is known as addition method or income approach.

The subtraction method estimates value added by means of the difference between outputs and inputs i.e. T = t (output – input). This is known as Product Approach and it has further variants in the way of subtraction attempted from among direct subtraction and indirect subtraction method. Direct subtraction is equivalent to a business transfer tax whereby tax is levied on the difference between the aggregate tax on exclusive value of sales and purchase. Intermediate subtraction method is based on deduction the aggregate tax – inclusive values of purchase from the aggregate tax inclusive value of sales and taxing the difference between them. Finally the indirect subtraction method entails deduction of tax on inputs from tax on sales for each tax period i.e. output – input. This is known as tax-credit method or invoice method. Most countries use this method and employ net consumption VAT.

**Types of VAT :**

Prof. C.S. Shoup has distinguished four varieties of VAT viz.

a) Gross product value added tax.

b) Consumption type value added tax.

c) Wage type value added tax.

d) Income type value added tax.

As per first method aggregate base of VAT can be stated as

$GNP = C + I = W + P + D$

Where P denotes net profit after depreciation and D denotes depreciation.

As per Second method

$C = W + P + D - I$

$C + I = W + P + D$

$\therefore GNP = W + P + D$

As per Third method

$NNP = C + I - D = W + P$

$NNI = W = C + I - D - P$

As per Fourth method

$GNP = C + I = W + P + D$

$NNP = C + I - D = W + P$

$\therefore$ Tax base of income $= C + I - D = W + P$

**Points in favour of VAT :**

a) Neutral form : It encourages vertical integration of production and most suitable and economical for the promotion of growth and stability.

b) Simplified form of taxation : Though a multi point tax it is like a single tax in its effect.

c) Less scope for tax evasion : Since VAT is divided into several stages of production there is less possibility of evasion of tax.

d) Easy method of investigation.

e) Promotes export.

f) Less burdensome.

g) More efficient.

h) It avoids cost cascading.

The net effect of VAT for consumer is that the tax on some items currently at 8% would go upto 12.5% while others at 20% might come down to 12.5%. Govt. may incur initial revenue loss because of lowering of duty but there will be some gain on those items on which tax moves up from 8% to 12.5% only, all transactions will have to be on record to get the benefit of tax set off at earlier stages of production. Hence the scope for tax evasion will be low. With lower tax evasion Govt. revenues are expected to swell over time leading to a possibility of lower VAT rates so that consumers can benefit.

**Economic Effects of VAT :**

Price Effects : The effect is direct but it depends on whether VAT

replacement of the existing taxes to recover the lost revenue from other taxes reduced or replaced by VAT. In general VAT causes price hike subject to elasticity of demand and supply of the commodity concerned. It is forwarded because traders would wish to maintain their profit level by shifting VAT forward. All traders will initially bear tax and compliance cost but would like to recoup them in one course. Whether VAT would be inflationary depends not only on the possible offsetting changes in other taxes and on accommodating money supply but also on the reaction of wages, transfer payment, liquidity and psychological effects. Musgrave has suggested the following five alternative policy settings –

a) Wages flexible, monetary policy permissive.

b) Wages downward rigid, monetary policy permissive.

c) Wages flexible, monetary policy stabilizes product price level.

d) Wages downward rigid, monetary policy stabilizes product price level.

e) Wages flexible, monetary policy stabilizes factor price level.

VAT would be inflationary if it is shifted forward as the consumer maintains its real consumption and accommodative credit policy follows.

**Distributional Effects :**

It refers to incidence and equity aspects of the tax i.e. who really bears the tax burden. In case of VAT it depends upon various possibilities of shifting, avoidance and evasion of tax as well as on the composition of the users of the commodity. The distributional effect depends upon the possibility of shifting of VAT. Profit maximising firms will shift all commodity taxes forward as these taxes affect marginal cost. But firms which have monopsony in the market for a factor or input will shift VAT backward.

The extent to which shifting would take place depends upon the elasticity of supply and demand.

The greater the elasticity of demand the less the Firm would be able to shift. Since the demand for a commodity is a function of both its price and availability of substitutes. A broad based VAT would have less chance of substituting one commodity for another and hence shifting is more likely to take place. Most empirical studies on incidence assume

expenditure of the household. The progressivity or regressivity of VAT depends on factors such as number of exemptions and zero ratings and on other compensatory features.

An important factor in analysing incidence of commodity taxes relates to the indirect effect of that part of consumption taxes which can not directly be allocated to the consumption of the household. The results of distributional effects indicate that VAT is not a useful instrument to mitigate regressivity. To estimate the total distributional effect of VAT we must simultaneously look into the distributional impact of Govt. expenditure which is a major policy variable to influence the redistributive process.

**Assessment of Impact of VAT on Centre and State Finance :**

The impact can be classified into four parts viz.

a) Loss from input tax credit.

b) Reduced value of output.

c) Loss from removal of CST.

d) Gain from taxation of second and subsequent sales.

*Loss from input tax credit;*

Taking the industry group based figures for loss from tax credit and the share of individual states in the particular industry total cost can be derived from providing input tax credit. Given the assumption that only 50% of the inputs used in a state are locally purchased the loss to the state exchequer would be half of the total cost.

**TABLE – 1**

***(Rs. in Crore)***

**Gain / Loss from switch over to VAT.**

| Value Added | 10% | 15% | 20% |
|---|---|---|---|
| Case – 1 | 5480 | 1122 | 3235 |
| Case – 2 | 5126 | 1441 | 2244 |
| Case – 3 | 4052 | 319 | 4691 |

Loss from reduced value of output : Assuming that lower cost form of fax credit is passed on to buyers through lowering of the value of output which would be lower by the full amount on inputs.

The loss from removal of CST : The loss on this count is straight forward – the entire revenue from CST as on the date of withdrawal of CST.

Gain from taxation of second and subsequent sales : On this count three possibilities are considered i.e. 10%, 15% and 20% increase in value added. Allocating this value across the states is not straight forward, since goods manufactured in a state are not necessarily consumed in that state.

Introduction of VAT will promote vertical disintegration / specialisation and thereby improving efficiency and production.

Impact varies considerably across the states while states seem to gain consistently from such measures. The way for the states to avoid incurring losses with the introduction of VAT would be through variations in the rate structure of tax. Since the tax rate on output would vary between 4% and 12.5% this would result in under estimating the loss of revenue. Conversely if the entire cost of tax on inputs was not being passed on as higher price of output, the loss of revenue on this count would be lower. Since information on this feature is not easily available, the lower rate of 4% is applied to arrive at associated loss of revenue.

Zero-rating of a transaction refers to a status where the sale is not subject to a tax and any input taxes paid are refunded. Given the assumption that all interstate sales are from goods manufactured in the state, if all input taxes corresponding to goods manufactured in the state are set off, this would minimise the loss from providing tax refund in these transactions.

For locally sold goods for final consumption the loss would be higher since a higher rate would apply.

When VAT is introduced it will replace Sales Tax but other levies such as entry tax, octroi, luxury tax and mandi cess will continue. Unlike Sales Tax VAT will be a multipoint levy and while Sales Tax rates are mostly around 7% to 8% VAT rate will be 12.5%. That means 50% hike for most goods and as new tax will be levied upto the last point of

sale, it will be calculated on a higher value and at a higher rate than the current sales tax leading to increased prices for the consumer.

After introduction of VAT in April 2005 the major issues are –

Will VAT promote less bureaucracy / corruption ?

Will the benefits of VAT be really passed on to the ultimate consumers ?

Will trading slow down due to VAT ?

Is the Govt. equipped to deal with a new system ?

Will paper work increase ?

Will Firm Sector co-operate with Govt. ?

Will the Govt. be receptive to business needs ?

All these issues will determine the efficacy of VAT.

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# Relative Prices And Revenue Under VAT :

## Some Emerging Issues

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### INTRODUCTION :

Value added tax is a tax on the value added at each stage of production. If cotton is used to make a cloth, the cloth maker is taxed on the difference between what he sold for cloth and what he paid for the cotton. In a sales tax system, the cloth maker gets no credit for having bought cotton that has already been taxed. Under VAT the same thing is not taxed repeatedly since producers at each stage get credit for taxes paid on inputs. They can lower their sales price by passing on the reduced tax burden to the buyer. Under the VAT system the cloth will cost less than the cost under the sales tax system. So the consumers are likely to get benefit due to lower price and the sales tax evasion will be reduced which in turn will increase the government revenue.

The VAT system was first invented in France and more than 120 countries covering 70% of world's population have implemented the VAT system. Almost 30 per cent of total revenue collected as revenue worldwide comes from VAT. The world's largest economy USA has not implemented VAT but Canada had a bad time after implementing VAT. The Govt. of India has released a white paper to implement VAT from 1st April 2005 but there is more panic than planning everywhere.

The present paper seeks to analyse aspects of VAT, the commodities covered and the VAT system in Orissa. The Govt. is happy but the traders are angry and there is countrywide reaction to the new tax system. The VAT promises of making tax evasion illogical and it is likely to make India business-wise one country. The VAT would ensure 3 things.

i) The same product not be taxed over and over again.

ii) Traders cost of filing returns could decrease from current high levels.

iii) The tax on interstate sales would decrease from current level.

The Govt. assures that the prices would not rise due to VAT but all India traders association credits 20 to 25 per cent hike in prices as most commodities of daily use have been put on higher bracket of tax under VAT. There are four rates of VAT such as zero, one per cent, 4 per cent and a general rate of 12.5 per cent. All states will apply these rates and the same goods will be charged at same rates every where.

## 2. PRICE AND REVENUE UNDER TURNOVER TAX AND VALUE ADDED TAX.

Expansion of Tax base, reduction in evasion, simplification of tax rules to bring about transparency and efficiency are the objectives of value added tax. However, loss of revenue arising from a switch over to VAT can be made up by widening the tax base (to cover services) with better information. Extra revenue through improved efficiency and extension of tax base to cover services etc. have to be viewed as additional revenue.

It is important to analyse the price and revenue under alternative tax system. The issue of relative price is central to any analysis of resource allocation and efficiency implication of a choice of a tax system. A model has been developed in this study to compare the price and revenue under Turn Over Tax (TOT) and Value Added Tax (VAT).

**TABLE – 1**

**Price and Revenue Under TOT and VAT**

| Sl. | Turnover Tax (10%) | | | | Value Added Tax (10%) | | | |
|---|---|---|---|---|---|---|---|---|
| No. | Producer/Seller | A | B | C | Producer/Seller | A | B | C |
| 1. | Cost of inputs | 0 | 100 | 200 | Cost of inputs | 0 | 100 | 200 |
| 2. | Profit = Value added | 100 | 50 | 50 | Profit = Value added | 100 | 50 | 50 |
| 3. | Price before tax | 100 | 150 | 250 | Price before tax | 100 | 150 | 250 |
| 4. | TOT | 10 | 15 | 25 | VAT | 10 | 5 | 5 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5. | Selling Price | 110 | 165 | 275 | Selling Price | 110 | 155 | 255 |
| 6. | Total Value Added | -- | -- | 200 | Total Value Added | -- | -- | 200 |
| 7. | Total Tax Revenue | -- | -- | 50 | Total Tax Revenue | -- | -- | 20 |

Assuring that there are three producers A, B and C a comparative picture of revenue and prices when a 10% Turnover Tax and 10% value added tax are imposed on the commodities is as follows. The prices under TOT are Rs.110, Rs.165 & Rs.275 but the prices under VAT are Rs.110, Rs.155 and Rs.255 respectively. The prices of commodities sold by producer B and C are less by Rs.10 and Rs.20/- respectively. The Total Tax revenue of Govt. is Rs.50 under TOT but it is Rs.20 under VAT. So initially the VAT will bring less revenue for the Govt. but in the long run widening of tax base is likely to increase the revenue.

## 3. TAX RATES AND COMMODITIES OF VAT

Finance minister Sri P. Chidambaram released the white paper on Value Added Tax on 17th January 2005 for levy of a uniform State Level Tax on commodities. This will replace the sales tax regime in states. The following points are the important aspects of the white paper on VAT.

i) The uniform VAT will be levied on 500 items.

ii) 46 local and social items are exempted from it.

iii) About 270 items including drugs and medicines, all farm and industrial inputs, capital goods and declared goods will be levied 4% tax.

iv) The tea producing states would get the option to levy 12.5 per cent or 4 per cent subject to review in 2006.

v) The remaining items will be imposed 12.5 per cent value added tax.

vi) Precious metals like gold and bullion would be taxed at 1 per cent.

vii) Petrol and diesel will be kept out of the VAT regime.

viii) Three items sugar, textile and tobacco covered under Additional Excise Duties will not be under VAT regime for a year.

ix) The threshold limit for traders coming under the VAT regime was relaxed from Rs.5.50 lakh of turnover from previous stance to Rs.5.40 lakh.

x) The traders within this limit can pay a composite VAT rate of 1 per cent but will not be entitled to input tax credit.

## 4. REGISTRATION OF TRADERS UNDER VAT

According to VAT recommendations a trader with a turnover of Rs.5 lakh and above need to register under VAT. The important points in this regard are as follows.

i) The states can fix a lower limit for traders from registration.

ii) If the turnover is between Rs.5 lakh and Rs.50 lakh, a trader has the option of registering under the composition scheme.

iii) A dealer under the composition scheme will have to pay a smaller percentage of his gross turnover as tax. However those opting for composition scheme will not be entitled for input tax credit.

iv) The retailer may opt for composition scheme as it involves less hassles. However, the number of traders opting for composition scheme will be very small.

v) The freedom to choose VAT or composition scheme remains with the traders. The difference between the two would be marginal depending on the nature of business.

vi) For smaller registered dealers, the composition scheme will be useful.

## 5. VAT IN ORISSA

The Govt. of Orissa has decided to implement VAT with effect from 1st April 2005 which will replace the earlier sales tax. The new tax system will cover business houses with annual turnover Rs.3 lakh.

The Govt. of Orissa is afraid of loss in tax revenue but it can be increased if the tax officials properly asses the tax, extend the tax base & enforce the tax laws.

## 6. DISCREPANCIES AND DIFFICULTIES

The value added tax has created panic among the businessmen and traders who came back to roads and declared strikes in last year.

i) Two tax rates under VAT such as 4 per cent and 12.5 per cent may create discrepancy in commodities.

ii) It will create problem in proper treatment of imports and exports and optimal size.

iii) There will be no cross state transfer effectively under the new VAT system.

iv) The tax can not be a proper destination based tax. This may also mean that some states may have border check-post. This will create many countries inside India instead of making India into a one single market.

## 7. SPECIFIC CONCLUSION :

Although late, the Government of India has taken a right step to implement Value Added Tax in place of sales tax for uniformity in tax rates across the states and to check inter state flow of goods and services due to tax differences. The principle of one tax and one country must be welcomed by academicians, businessmen and traders. The consumer will be benefited due to lower price and initial loss in revenue of State Govt. is likely to be adjusted in the long run due to widening of the tax base. 4 per cent VAT on medicine and on other essential commodities is a logical and right decision but 12.5% VAT on the commodities is comparatively higher when compared to the other countries of the world. This tax rate should be brought down below 10% in the long run to maximise consumer welfare and to reduce inflation. The Central Govt. must now create a modern Tax Information Network i.e. the IT system for the people.

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# Water Harvesting Structures in Orissa

# FEASIBILITY AND SUSTAINABILITY OF RAINWATER HARVESTING IN BOLANGIR DISTRICT OF ORISSA

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## I. INTRODUCTION

Water is a precious natural resource, renewable every year through natural hydrological cycle in which rainwater is the main component. Monsoon in India is fairly punctual but its distribution is erratic in time and space. The quantum and time of rainfall vary from area to area. Whereas on one hand the country has areas with the world's highest rainfall (e.g., Cherrapunji), it has some of the desert areas (in Rajasthan) on the other. Around 75 per cent of the rainfall is received during monsoon months, i.e., from June to September and most of the rainfall occurs in few days of the year. For example, average number of rainy days in Orissa is just 73.4 during which average annual rainfall of 1502.6 mm is received (DAFP, 2000) and most of it is lost in devastating floods and high level of evaporation. High degree of rainfall variability and run off wastage are mainly responsible for increasing frequency and magnitude of natural calamities (specifically in the form of drought and flood) in the state. On the other hand, there is enough rain (that comes and goes in few hours) which, with good combination of rain water harvesting and groundwater recharge can increase and stabilize the productivity of rain fed agriculture in the region where agriculture is the mainstay of 73% of total workforce (1991 Census).

In this context, this study attempts to analyze different methods of rainwater harvesting and to critically examine the suitability and [illegible] water harvesting measures for agricultural

development of Bolangir district of Orissa. The study attempts to identify different factors that determine performance (success or failure) of these water harvesting methods in the district.

Water harvesting (WH) in its broadest sense, is defined as the 'collection of runoff for its productive use' (Critchley et al, 1991). It refers to collection and storage of natural precipitation and also other activities, aimed at harvesting surface and ground water, prevention of losses through evaporation and seepage, and all hydrological studies, and engineering interventions, aimed at conservation and efficient utilization of the limited water endowment of a physiographic unit, such as watershed. In the semi-arid drought-prone areas where it is already practised, it is a directly productive form of soil and water conservation (Ray 1986). In regions where crops are entirely rain-fed, a reduction of 50% in the seasonal rainfall, for example, may result in a total crop failure. If, however, the available rain can be concentrated on a smaller area, reasonable yields will still be received. Both yields and reliability of production can be significantly improved with this rudimentary form of irrigation. Expansion of area under HYV crops, increase in cropping intensity and farmers' income are also the possible outcomes. The systematic rainwater harvesting can solve the complex problems like soil degradation, salinity and alkalinity, water logging, water table depletion, water quality deterioration, problem of uneven distribution and water wastage.

In ancient times, rainwater harvesting systems were preeminent in rural life for both agricultural and domestic purposes. The rainwater had been collected and stored in cisterns and tanks from rooftops and catchment. The tank system was collection point of run off, thereby moderating flash floods, providing a pond for pisciculture, a source of silt for fertilizer and material for construction, a recharge structure for ground water, a source of drinking water for livestock and above all an irrigation source for cultivation of crops. Like tanks and ponds, several water conservation measures like nadi, tanks, roof top collection, and step wells were followed traditionally in different parts of the country (Jha; 2000).

Bolangir district of western Orissa has been deliberately chosen

studies (Nayak, 2004; Selvarajan et al, 2002) reveal that one of the prime reasons for increasing vulnerability of Bolangir district to drought is the neglect of the traditional water harvesting structures. For instance, in the drought-prone Kalahandi-Bolangir-Koraput (KBK) districts of western Orissa, a network of 20,000 traditional tanks built with community participation helped in successfully combating the droughts until four decades ago. Given the undulating topography of this region, these tanks stored water, which was used during dry months. So a failure in rainfall never caused drought. Subsequently, these tanks were allowed to deteriorate and thereby increasing the vulnerability of this district to frequent droughts and water scarcity. Agro-climatically the district is hot moist sub humid central tableland with highly uneven topography and annual average rainfall of 1339.5 mm. As analysis of irrigation status and existing WH structures reveals, minor irrigation is the largest source of irrigation (67.2%) in Bolangir. The dug well and other WHSs like percolation tanks, cross bunds, farm tanks are the major sources contributing to its minor irrigation system (CGWB, 1997). Overall, WHSs have much better prospects in Bolangir compared to other districts of Orissa that can add stability to its rain-fed agriculture and strengthen the confidence of farmer community.

## II. METHODS OF RAIN WATER HARVESTING

Classification of water harvesting techniques is as varied as the terminology (Reij et al. 1988). Different authors use different names and often disagree about definitions and characteristics. Jha (2000) has mentioned about 27 methods of rainwater harvesting that can be taken up in various situations, though he has elaborated methods in details regarding their suitability and feasibility under different agro-climatic and topographic situations. Srivastav (2001) has developed runoff recycling tank based irrigation systems for different seepage conditions of rice based cropping systems with series of tanks and dug wells for getting optimal results in sub humid plateau region of eastern India. These systems have been tested in research farm as well as in farmer's fields and have been found quite successful (Srivastav, 2003). Verma and Nanda (2002) have categorized various WH measures with respect

Methods of rainwater harvesting differ for different rainfall zones and accordingly India has been divided into five regions. In case the average annual rainfall of a region varies from 100 to 500 mm, focus remains on (i) inducement of more runoff and its storage in situ and tanks and (ii) improving hydraulic efficiency of the catchments. This is usually the case of arid lands where rain falls infrequently and its quantity is insufficient for good crop growth. But in higher rainfall zones like sub humid and humid regions, rainfall is harvested in three major groups of techniques, i.e., In situ water harvesting, inter plot water harvesting and water harvesting in tanks for life saving or supplementary irrigation.

Rainwater harvesting in situ refers to harvesting the rainwater where it falls, often known as intra-plot water harvesting measures. These measures require proper land development, increasing infiltration capacity and opportunity, and storage of water in soil profile. Land development measures for rainwater harvesting include terracing, land leveling with shoulder bunds, graded border strips etc. In cultivable land, efforts should be made to retain as much rainwater as possible in root zone of soil profile. This requires increasing infiltration rate and water storage capacity of soil and the commonly used methods are off-season tillage, crop cover during rainy season, conservation tillage or mulch tillage, deep ploughing etc.

With inter-plot runoff conservation measures, run off produced or induced by changing configuration in one part of field is allowed to be concentrated in another part of the field/plot which is treated to receive and conserve runoff. The inter plot conservation requires shaping of land into smaller plots or strips. Harvesting and storing rainwater in tanks of different designs is another technique, which have been practiced since ancient times as a prominent water harvesting technique.

FAO (See Critchley et al, 1991) has classified all available measures of water harvesting into three broad categories. They are micro catchments (rainwater harvesting), external catchment systems (rainwater harvesting) and floodwater farming (floodwater harvesting). The classification by FAO on the basis of length of catchments happens to provide more clear-cut classification of WH techniques. Micro catchments system sometimes refers to intra-plot rainwater harvesting

by which runoff is stored in soil profile within the plot with length of catchments less than 30 metres whereas external catchment system is a long slope catchments technique in which one plot/field (or a part of long plot) produces or induces the run off and other plot (or other part of the same plot) receives the run off, provided the length of catchments is more than 30 metres. On the other hand, previous classification (e.g., Verma and Nanda, 2002) did not consider the length of catchments as the criteria of classification. They maintained some sorts of flexibility in categorization of WHSs.

Another basic difference between these two approaches is that FAO classification is usually applicable in low rainfall regions while other is suited to Indian conditions where humid and sub humid land constitute about 74.5% of total geographical area. Therefore we may accept the broad classification as stated in Table 1 for Orissa situation with little modification that the water harvesting in tanks should not be taken as the third major group of WH techniques, because water harvesting in tanks is a part of inter plot water harvesting in which tanks may be a part of receiving plot of the long slope. Instead floodwater harvesting (i.e., management of excess rain water) should be considered as third major group. So the three major categories of rainwater harvesting techniques that are suitable for sub humid region like Bolangir may be restated as (i) water harvesting in situ or intra-plot water harvesting, (ii) inter plot water harvesting and (iii) flood water harvesting. The WH techniques falling under each of the three broad groups have been analyzed in the subsequent section.

## III. FEASIBILITY AND SUSTAINABILITY OF WHSs IN BOLANGIR

A wide range of WHSs are operational in the study region, out of which dug wells and tanks (locally known as Chahala, Kata, Munda, Bandha etc.) constitute the majority. A large number of factors influence the seasonal performance and long-term sustainability of the structures. It is worth mentioning that previously (by 1965), traditional WHSs were the major source of irrigation, irrigating about 33% of gross cultivated area in Bolangir. But due to some unfavourable factors, these TWHSs have been deteriorated. As a result, the area under assured irrigation has reduced to mere 6% (Action Aid, 2001). In order to identify high

.performing WHSs and feasible additional WHSs, it is essential to analyze the factors affecting their feasibility and sustainability in the region.

## 3.1 FACTORS AFFECTING FEASIBILITY AND SUSTAINABILITY OF WHSs

Major factors that determine the feasibility and sustainability of WHSs in a region are its soil characteristics, land slope and topography, rainfall pattern and variability, ground water availability and a host of socio-economic and institutional factors such as peoples priority, participation, adoption of the systems, gender and equity, land tenure and political will etc. Some studies (Critchley et al, 1991; Critchley and Reij, 1989; Reij et al 1988; and others) have highlighted the implications of different natural and socio-economic factors for WHSs. This paper attempts to examine the feasibility and sustainability of WHSs in Bolangir on the basis of existing status of these factors.

### (a) Soil Characteristics and Land Topography

The main characteristics of soils, which affect plant performance under WH systems, are soil texture, soil structure, soil depth, fertility, salinity, infiltration rate and water holding capacity of the soil. The medium textured soils or the loamy soils are best suited to WH system since these are ideally suited for plant growth in terms of nutrient supply, biological activity and nutrient and water holding capacities. A good soil structure suitable for WHSs is usually associated with this loamy soil and a relatively high content of organic matter. The depth of soil is an important parameter for WH systems. Deep soils have the capacity to store the harvested runoff as well as providing a greater amount of total nutrients for plant growth. Soils of less than one metre deep are poorly suited to WH. A very low infiltration rate can be detrimental to WH systems because of the possibility of water logging and high level of run off in the cultivated area. The soils of the cropped area however should be sufficiently permeable to allow adequate moisture to the crop root zone without causing water logging problems. Not only is the depth important, but the Available Water Holding Capacity (AWC) of the soil is critical also. In WH systems, it is vital that this water can be held by

An analysis the soil characteristics of Bolangir (Sarkar et. al, 1998) it reveals that major portion of the cultivated area (around 50%) is characterized by loamy soil, 30% is clayey, and 20% is of sandy and other texture. AWC of about 80% soils in Bolangir is medium (170 to 200 mm), while that of 15-20% soils in Bolangir have low to medium AWC. About 25% of soil depth is shallow to deep, 65% is deep to moderately deep, and rest 10% is moderately shallow to shallow and of other ranges. Soil erosion in Bolangir is normally slight to moderate. While 30% of the land depicts moderate slope and rest are of gentle slope, major portion of land topography at local level is very uneven. The major soil characteristics of the district favourably match the requirements for feasibility of WHSs. Major portion of soils is loamy with medium AWC which is highly suitable for WHSs. Highly uneven land topography with hilly terrain is not suitable for large and medium irrigation projects on the ground of cost effectiveness, long gestation period and problem of displacement and rehabilitation. Hence, there is a strong case for encouraging WH technique as a major source of minor irrigation in the region.

**(b) Rainfall Pattern and Variability**

It has already been discussed earlier about the type of WHSs suitable under different rainfall zones. Water harvesting planning and management in arid and semiarid zones present difficulties which are less due to the limited amount of rainfall than to the inherent degree of variability associated with it. But in case of humid and sub humid region, it is the high degree erratic pattern of rainfall that leads to either water scarcity causing drought like situation or excess water causing floods. Huge amount of rainfall goes waste due to their occurrence in short span of time. WH plays a pivotal role in these high rainfall regions by providing life saving as well as supplementary irrigation during water scarce periods.

In case of our study region Bolangir, though average rainfall during 1950-1991 (1230 mm) is close to that of Orissa average (1339 mm) and much higher than that of India average, the rainfall pattern is highly erratic in nature (CV of 12.6% for the period 1986-2003). Long term normal rainfall in the district is gradually declining. For example, average

to 1230 mm for the period 1951-1991 (a decline of 14.8%), and further to 1206.7 mm for the period 1986-2003. As a result of declining trends of annual rainfall with high degree of variability, frequency of drought is successively rising. Probability of occurrence of drought in Bolangir (taking the database of daily rainfall from 1986 to 2003 is found to be 56.35.

On the other hand, due to intensive rain during some monsoon periods, a number of rivers flowing through the district drain 1 lakh to 4 lakh cubic feet of rain water every day into the Bay of Bengal. Lack of WHSs allows this huge quantity rainwater to go waste (Action Aid, 2001). Bolangir can ill afford this, especially when about 57% and 18% of its total agricultural land happen to be upland and middle land respectively. Strengthening the network of WHSs, renovating defunct structures and creating new structures at critical locations are necessary steps to check huge water wastage and to increase the area under assured irrigation in the region.

**(c) Socio-economic & Institutional Factors**

Engineering and agronomic aspects of the project site may be important for successful technical operation of the system but socio-economic and institutional factors significantly influence the sustainability of the WHSs. Local level organizations involving farmers play a pivotal role for sustainability of these structures. However the success of a farmers' organisation depends on some fundamental factors like common interests and collective effort of farmers, effective leadership, bureaucratic commitment, government patronage, financial viability and legal support (Swain, 2002; Swain & Swain, 2003). It is widely accepted that unless there is active people's participation in every stage of WH projects, whenever required, the projects are doomed to failure (Action Aid 2001). Local level stakeholders must understand and be happy with a system which is appropriate, and which they are able to manage and maintain. It is important to understand the people's priorities first so as to achieve success. If the local priority is drinking water supply, for example, there will be poor response to water harvesting systems for irrigation purpose. Widespread adoption of water harvesting techniques by the local population is the only way that significant areas of land can be treated at a reasonable cost on a

sustainable basis. To encourage adoption, apart from incentives in the form of tools, for example, there is a need for motivational campaigns, demonstrations, training and extension work. More importantly socio-economic costs involved in the projects should be at the acceptable level for stakeholders.

Land tenure issues can have a variety of influences on water harvesting projects. On one hand it may be the lack of tenure means that people are reluctant to invest in water harvesting structures on land which they do not formally own. Where land ownership and rights of use are complex it may be difficult to persuade the cultivator to improve land that someone else may use later. On the other hand there are examples of situations where the opposite is the case - in some areas farmers like to construct bunds because it implies a more definite right of ownership (Critchley and Reij, 1989). The most difficult situation is that of common land, particularly where no well-defined management tradition exists. Some villagers are understandably reluctant to treat areas for WHSs if they are used for grazing that fuels conflicts among the farmers. Gender and equity are other significant factors which influence the performance and sustainability of the WHSs.

So far as Bolangir district is concerned, socio-economic and institutional factors provide mixed opportunities for sustainability of WHSs. Incidence of poverty is much higher so that a fairly large proportion of population cannot take up such kind of projects individually. Landless and marginal farmers constitute 52% of total main workers. Literacy levels are considerably low with 61.37% people illiterate. Since people are very much acquainted with managing TWHSs, their education levels don't negatively influence the sustainability of the structures. However, modernization programmes are hampered due to low level of education and awareness. Shortage of power along with poor economic condition prevents large-scale use of energized dug wells and tube wells and drawing of ground water though ground water is abundantly available in the region. Politically the region is highly neglected. Only politicians come here during the poll with prospective agenda that never gets transformed into action. Just 4.1 % of the farmers were covered under crop insurance. Irrigation coverage hovers around 4% to 6% over

## TABLE - 1 :

## MAJOR SOCIO-ECONOMIC AND INSTITUTIONAL FACTORS AFFECTING WHSS IN BOLANGIR

| Blocks of Bolangir | % of irrigated area to total cultivable area | % of geographical area covered under forest | % Barren uncultivable and other fallows | % Rural population served by Power Supply | % house holds below poverty line | % people illiterate | Landless & marginal labourers as a % of total main workers | % Farmers covered under crop insurance | % People benefited by IRDP |
|---|---|---|---|---|---|---|---|---|---|
| | (1991) | (2001) | (2001) | (1991) | (1997) | (1991) | (2001) | (2002) | (1991) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Agalpur | 4.42 | 4.0 | 16.8 | 100.00 | 53.0 | 55.2 | 60.1 | 12.1 | 2.4 |
| Bolangir | 1.92 | 14.2 | 21.4 | 90.34 | 53.0 | 59.4 | 52.4 | 3.2 | 4.1 |
| Deogaon | 1.84 | 17.0 | 26.6 | 98.94 | 52.0 | 62.8 | 54.3 | 6.1 | 4.2 |
| Tentulikhunti | 2.87 | 7.3 | 15.8 | 52.58 | 81.0 | 60.2 | 53.5 | 4.1 | 4.5 |
| Loisingha | 2.57 | 5.9 | 20.6 | 62.84 | 52.0 | 59.3 | 50.4 | 7.5 | 2.5 |
| Puintala | 2.05 | 0.8 | 12.9 | 88.62 | 59.0 | 57.6 | 45.2 | 3.7 | 3.4 |
| Belpara | 5.53 | 6.9 | 31.9 | 83.11 | 53.0 | 68.3 | 49.1 | 3.1 | 2.2 |
| Khaprakhol | 2.39 | 4.8 | 17.7 | 79.99 | 64.0 | 66.4 | 51.1 | 2.9 | 1.9 |
| Patnagarh | 5.69 | 12.9 | 24.3 | 82.20 | 64.0 | 62.3 | 50.3 | 2.8 | 3.0 |
| Bangomunda | 0.80 | 5.6 | 15.1 | 68.70 | 74.0 | 71.1 | 49.8 | 1.7 | 0.9 |
| Muribahal | 7.79 | 8.7 | 18.7 | 59.68 | 60.00 | 73.4 | 56.3 | 2.1 | 2.1 |
| Saintala | 5.02 | 7.3 | 13.5 | 72.06 | 81.0 | 64.2 | 47.7 | 2.6 | 3.1 |
| Titlagarh | 12.70 | 2.4 | 12.6 | 77.27 | 55.0 | 72.5 | 58.8 | 1.7 | 1.7 |
| Tureikela | 0.37 | 10.1 | 27.6 | 73.44 | 66.0 | 76.8 | 49.3 | 3.7 | 2.7 |
| Bolangir Dist. | 4.00 | 7.70 | 19.7 | 77.84 | 61.93 | 61.37 | 52.04 | 4.10 | 2.77 |
| CV (%) across | | | | | | | | | |

Sources : 1) District statistical handbook, Bolangir, 2001
2) Census of India, 1991 & 2001, 3) GIC of India, Bhubaneswar

Huge deficiency is felt on marketing front. Local produces including paddy are hardly sold at reasonable price. Institutional failure in the region is clearly visible and as a result a large number of traditional WHSs that were serving the people during water scarce period in ancient times have been allowed to deteriorate. About 20% land in Bolangir is either barren or uncultivable or other fallows that can be developed gradually and treated with community based WHSs. Increasing participation and awareness of local people in various developmental activities in recent times is a positive development in this direction. With very low level of irrigation coverage people are eager to increase the area under assured irrigation which is possible only with WHSs while other factors like soil characteristics, rainfall pattern and land topography are favourable for WHSs as a source of irrigation. Weak financial position of the local community is the main hindrance in the process that can only be eased with governmental efforts and effective institutional development.

Since loamy soils are dominant in the region with uneven topography and higher proportion of uncultivated fallow and wasteland, WH structures have the better prospects in the region. But depending on the degree of existence of different factors it seems that some kind of structures can better solve the irrigation problems of Bolangir than others. Few of these structures that are suitable to the conditions in the region have been analysed in the following section.

## 3.2 FEASIBLE WHSs IN BOLANGIR

### (i) Water harvesting *in situ* or Intra-plot water harvesting Methods

As it has already been discussed, this type of WH technique is used to harvest rainwater within the plot where it falls, with reasonably smaller plot size. Some of the intra plot WH measures suitable for Bolangir are contour bunds and trenches, ridges and furrows, pits and shafts, and dug well recharge etc. Contour bund is a narrow trapezoidal

so that all the impounded water is absorbed gradually into the soil profile for crop use (WCM, 2004). On the other hand, contour trench is the reverse of the bund. Trenches are excavated at different contour levels to conserve the runoff in trenches, facilitating percolation of stored water underground. Among inter row water conservation measures, ridge and furrow method is widely practiced for crop production in Bolangir. Ridges follow the contour at a spacing of usually 1 to 2 metres. Runoff is collected from the uncultivated strip between ridges and stored in a furrow just above the ridges. Recharge pits and shafts are usually adopted for effecting direct point recharge and are highly relevant from recharge point of view of spot sources. Water conserved in pits/dug well is utilized during water scarce period for life saving or supplementary irrigation. This technique is very much useful for uneven topography and hence is suitable for Bolangir region where major portion of land topography is uneven and hilly. As per the study made by Central Ground Water Board (1997), dug well is the only feasible structure for ground water utilization in the region where ground water development has remained underutilized at 9.73%.

**(ii) Inter-Plot Water Harvesting Techniques**

Inter plot water harvesting techniques involve conserving run off in a part of field/plot which is supplied from other part of the filed/plot. Some of the inter plot WH techniques suitable for Bolangir are conservation bench terracing (CBT), long slope storage structures (i.e., check dams/gabion structure, percolation tanks, farm tanks, gully dams/ nalla bunding, hill side storage, etc.) and rooftop harvesting etc. CBT as a water harvesting technique involves runoff collection from an upper (contributing) catchments and diverting the runoff to lower part of the catchment (receiving) area (Verma and Nanda, 2002). While following this method for crop farming, crop selection is an important issue that must be judiciously decided. An experimental study at Dehradun indicate that crop yield (paddy) of lower receiving plot as well as total crop yield (paddy+maize) of both plots increased when maize is grown on contributing catchments and paddy in receiving plot (Anonymous, 1979).

The long slope storage structures suitable for Bolangir region are percolation tanks/cross bunds, gully dams/nalla bunding, hillside storage, farm tanks etc. Percolation tanks/cross bunds are conservation

structures aimed at inducing maximum percolation of harvested rainwater. Hillside storages are made on steep slopes to collect runoff from hillsides. The side of the hill acts as one wall of reservoir. The other three walls (in the case of rectangular reservoir on uniform slope) or a curved wall (where contours are curved) are constructed out of excavated materials.

Roof top harvesting is a promising technique by which monsoon runoff, which is otherwise wasted, is harvested and utilized for agricultural and domestic purposes. In this method, water is harvested as it falls from the rooftop by diverting the flow to the water recharge structures like abandoned dug well, recharge pit, trench, shaft etc. The structures are simple.

### (iii) Flood Water Harvesting

Flood water harvesting method, otherwise known as Floodwater farming technique, involves collection of excess natural runoff in soil or reservoirs. Excess run off in cropped land is directed to the other area having a crop which requires more water or to the storage for its recycling to replenish soil water at a later stage of crop growth. Some of the floodwater harvesting methods useful for Bolangir region are water spreading bunds and permeable rock dam. Water spreading bunds are often applied in situations when runoff discharges are high and the crops to be grown are susceptible to the temporary water logging. The major characteristic of water spreading bunds is that, as their name implies, they are intended to spread water, and not to impound it. Permeable rock dam is a floodwater farming technique where runoff waters are spread in valley bottoms for improved crop production. A permeable rock dam is a long, low structure made from loose stone (occasionally some gabion baskets may be used) across a valley floor.

## IV. CONCLUSION

Water harvesting (WH) can be considered as a rudimentary form of irrigation. Most of the factors that affect feasibility of the WHSs are favourable in sub humid region like Bolangir. As a method of rain water harvesting in situ, it is found that small size open well/dug well with radius varying from 0.5 m to 1.0 m is suitable for agricultural lands of Bolangir. Among surface water harvesting structures, traditional

tanks (locally known as *Kata, Bandha* etc.) have proved to be extremely useful not only in normal years but also in water scarce years. So far as feasibility of inter plot (long slope) WH techniques are concerned, conservation bench terracing, percolation tanks and roof top rainwater harvesting are quite feasible methods of rainwater harvesting in the district. Among flood water harvesting measures, water spreading bunds and permeable rock dams are possible techniques but their feasibility, adoptability and sustainability is largely dependent upon political will and peoples' participation as these structures need high level of investments and local people may not accept it due to problems of displacement and rehabilitation.

As analysis of irrigation status and existing WH structures reveals, minor irrigation is the largest source of irrigation (67.2%) in Bolangir and the share of dug wells stands highest among all sources of minor irrigation. Small size WHSs have the advantages over medium and large irrigation projects in Bolangir due to its uneven and hilly topography. So instead of going for big dams those have already consumed lot of time and resources but not yet completed, efforts should be made to increase the irrigation coverage through WHSs such as dug wells, check dams, tanks and renovate the existing defunct WH structures.

Though WHSs are quite feasible in the region, poor economic standards of majority, insufficient power availability, political negligence and weak institutional set up are the major hindrances for their sustainability. Governmental efforts need to be increased to remove impediments and to raise the irrigation coverage under WHSs. Continuous and concerted efforts should be made to increase farmers' participation and their adaptation which is essential for sustainability of WH structures.

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# Water Management Technology And Cropping Pattern In Rain-Fed Areas Of Orissa

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Water is the most important natural resource of our planet. Rapid urbanization and large scale industrialisation combined with rise in standard of living have led to high stage of ground water exploitation, making availability of water more scarce day by day. Due to population growth, economic development and environmental concerns water stress has emerged as a real threat and this natural resource is under relentless pressure. Water exists on the earth in three forms, gaseous, liquid and solid. Accordingly the Hydrological Cycle has 3 stages.

1. Evaporation or fly off when some part of the rainfall goes back to the atmosphere.
2. Condensation or precipitation or delayed run off under which a part of the rainfall percolates underground.
3. Run off under which water flows on the surface and forms streams, rivers, etc.

The State of Orissa has 30% of the cultivable area bestowed with irrigation facilities. The average annual rainfall of Orissa is 1442 mm. If such quantity of water is stored in the geographical area of Orissa 15.57 million hectares, then it will have an height of 4'9" of water. Of this total rainfall water 75% are received by the State in the South West monsoon period from June to September. Of this run off surface water 50% drains in to the Sea, 10% are evaporated, 10% are preserved in different irrigation dams, ponds etc., and of the residual 30%, 23% of it is available for soil moisture facilitating crop production and the remaining 7% percolate underground that is used for drinking water through tube wells and used for cultivation. Rainfall in Orissa occurs in short spells and high intensity. While at the national level, of the 147

million hectare cultivable land, 92 million hectares (62.58%) depend upon rainfall, in Orissa of the total cultivable land, 70% are rainfed. From the water demand and availability through rainfall it is observed that there is an excess of 668.5 mm rain water during rainy season and deficit of 505.7 mm during winter and 327.8 mm during summer season. So the excess rainwater can be effectively conserved and cropping intensity can be increased to 200%. Hence, there is a need for selection of a suitable cropping pattern to get the maximum return.

Of the total agricultural produce, 40% to 50% are obtained from non-irrigated or rainfed lands, Since there is erratic, non-uniform and skewed rainfall, it causes flood in rainy season when huge amount of water are wasted, while drought in other seasons when there is acute shortage of water which even does not support the Rabi Crops. Consequently, instability in agricultural produce, low agricultural productivity; insecurity of food grains etc. aggravate rural poverty and weaken the economic backbone of the farmers. The rain fall is non-uniform and uneven among 30 Districts of Orissa. Flood in one region of Orissa simultaneously and paradoxically exists with severe drought in another region. Districts like Kalahandi, Nuapada, Sonepur, Sambalpur, Sundargarh, Keonjhar, Jharsuguda and non irrigated areas of Baragarh are identified as drought affected areas in which rain fall concentrates within 4 to 5 months and no rain in 7 to 8 months. Out of the total cropped area, 52% area is covered with Rice, 5% with Cereals, 19% with Pulses, 10% with Oil seeds, 6% with Vegetables and 4% with Spices.

## THE CONCEPT OF WATER HARVESTING STRUCTURE (WHS)

Water Harvesting Structure refers to storage and preservation of excess run-off water and to use them at the time of scarcity. Collecting water when it rains, storing it and then using it is called Rain Water Harvesting (RWH). In the last 40 years, 15 droughts have occurred in Orissa of which 5 were severe. During summer 2000, towns like Berhampur and Titilagarh suffered from acute drinking water scarcity. The rain water harvesting is an appropriate answer to the problem of safe drinking water.

The total amount of water that is received in the form of rainfall

the total amount that can be effectively harvested is called the harvesting potential.

Volume of water received = Area catchment × Amount of rainfall

Volume of water harvested = Volume of water received × Run off Coefficient.

Water harvesting Potential = Rain fall (mm) × Collection efficiency.

The collection efficiency account for the fact that the rain water falling over an area can not be effectively harvested because of evaporation, spillage etc. Collection efficiency depends upon the run off coefficient.

## 2. STRUCTURE OF WATER HARVESTING TECHNOLOGY AND WATERSHED MANAGEMENT

### 1. Mechanical Methods or Engineering Methods

(a) **Contour Terracing** : Under this method a series of properly spaced ridges and drainage channels are formed along contours by construction of suitable mounds of earth. First terrace is generally built near enough to the upper limit of the slope. Terraces should always be uniformly graded so as to prevent ponding of water on the one hand and development of erosional velocities on the other.

(b) **Excavation of ditches** : Artificial channels (ditches) are excavated at suitable locations for the removal of excess water from approaching the fields especially in steeply sloping regions.

Two types of ditches are commonly made for controlling soil erosion.

(i) *Diversion ditches* : These are excavated above the cultivated portion of a sloping area with a view to diverting the run off away from the field.

(ii) *Interception ditches*: These are made at regular and suitable intervals across the cultivated field and prevent sheet erosion. Volume of water is drained away from small strips.

(c) **Construction of embankments and check flows** : Small check dams are constructed out of various materials like stone,

(d) **Secondary Reservoir** : Construction of any pond when linked with the existing system of irrigation that include tube well or canal, pumps with water delivery mechanism and field channels can be termed as Secondary Reservoir. The irrigation water is routed through the pond. The benefits of the ponds are :

(a) Convenience of the farmers of applying water to the field in term of time and crop need.

(b) Some water can be stored which can be used for life saving irrigation to the crops to minimise the yield losses in case of long dry spell and uncertainly of water availability.

(c) Water can be delivered in proper stream size to minimise the seepage and deep percolation losses and hence improving irrigation efficiency.

Hence, the farmers will have several benefits through saving of irrigation water and improve quality and quantity of produce. The run off or excess rain water could be stored in small mats to prevent evaoporation. The run off water collected in to small ponds can be used in the following situation.

(a) Saving of standing Khariff crop from drought.

(b) Providing pre-sowing irrigation for Rabi crop.

(c) Extending the growing season for the benefit of long duration crops.

(d) Providing a minimum irrigation for growing vegetables, fruits and fodder crops in small areas.

**2. Dry Farming Technology**

(i) **Capturing and retaining rain water** : The chief feature of this technology is to capture and retain as much of rain fall as possible. For this, a suitable tillage and moisture conservation technology has to be introduced. Deep ploughing in some cases and minimum cultivation in others and the sowing of Khariff crops in ridges so that moisture for Rabi crops can be captured in furrows.

(ii) **Low cost Water Harvesting Technology** : The new water technology has to be introduced for water storage in graded

steps i.e., irrigation may be provided first in furrows and then techniques like sprinkler and trickle irrigation may be undertaken.

(a) *Suitable Choice of Cropping Pattern* : A crop variety which grows quickly after sowing to be developed so that two crops can be grown in place of one long duration crop. For example - Pusa Baisakhi of moong (50- 60 days), CSH3 of Jowar (110 - 115 days), HB4 of bajara (80-90 days) and CR 32-39 of rice (100 days) have been developed. The strategy of dry farming also is based on the cultivation of drought tolerant and short varieties of crops, supplemental irrigation for critical periods, increasing the land and water used through double cropping with better crop planning encouraging agronomical practices which lead to stabilization of crop production such as proper time of sowing and pasture management.

**3. Soil and Moisture Conservation Practices :**

These methods are broadly of two types :

**1. Agronomic Methods**

(a) *Rotation of Crops* : Crop rotation controls erosion, reduces soil loss and improve productivity, because productive elements are added to the soil by another crop grown in succession.

(b) *Contour Farming* : It includes all operations like tillage and weeding along with the contour available in the land. It reduces runoff, increases soil moisture for crop production, reduces soil losses and increases crop yields.

(c) *Strip Farming* : In this method the cultivated crops and the cover crops are sown in alternative strips during the same period. These strips are generally made parallel with the contours. To check severe soil erosion due to heavy rainfall and rapid loss of soil on slopping ground, construction of embankments protect the land from being eroded. Small check dams for water catchment in hilly areas and erecting bunds on sloping field prevent the loss of the sur-

(d) *Reclamation of ravine lands* : Small channels are made on the terraces for safe carrying of the runoff water downwards in to big ravines. It is accomplished by placing a series of terraces across the slope one below the other. The catchment of the Machkund Project in Orissa is a case in point.

(e) *Bench Terracing* : By terracing, fields are made of narrow width in a step like manner. Whenever there are old establishments on hilly land some forms of bench terrace strip cultivation should be evolved to check the loss of soil.

(f) *Trenching* : It involves the construction of any form of depression or micro pits or trenches over the land surface both excess surface run off and silt carried with it. Continuous contour trenches are recommended for storage of water in low rainfall areas.

## 4. Conjunctive use of water

The main policy for drought areas should be conjunctive use of water from rainfall, surface and under ground water to sustain an optional crop pattern and ensure reasonable and reliable income. Since there is a great scarcity of perineal rivers, great stress need to be laid on development of irrigation in these areas through smaller works like anicuts, bandharas, tanks and dug-wells. Though percolation tanks and check dams do not provide direct irrigation they do contribute to firm up and augment supplies in nearby wells and thus facilitate irrigation. Water losses due to seepage from unlined canals, distributaries and field channels may be minimised by lining of water couse. In drought areas drip or trickle irrigation may be employed to reclaim desert areas for growing off season crops as done in Israel.

## 5. Multiple Cropping Programme

It aims at maximising production per unit of land and per unit of time by taking three or four crops from the same piece of land in a year. This has been made possible because of new short duration high yielding varieties and improved agricultural technology. The Multiple Cropping Programme was launched in 1967-68 by economising resources to yield increasing returns. Multiple cropping appears in the

(i) *Mixed Cropping And Inter-Cropping* : In areas where the usable water of 20mm are not available per week for 12 weeks mixed cropping and inter-cropping are desired. If there is a water scarcity and the safe growing period of the crop is less than 9 weeks, then cotton, groundnut, moong, jowar, pulses, oilseeds etc., should be cultivated in place of paddy. Crops selected should be quick maturing, short-statured and the main root should be able to go deeper to use water. Cropping mixtures are widely grown especially in Khariff season, pulses and some oilseeds are grown with maize, jowar and bajara. During the Rabi season, especially in the irrigated areas, wheat and barley are grown as mixture of grain crops.

In *inter-cropping*, crops could be alternatively grown with each other in the same field- each occupying a specific width in specific sequence. As for example 6 lines of groundnuts or 7 lines of moong are cultivated with 2 lines of paddy to save at least one crop from the natural disaster. This is known as strip cropping and is considered advantageous to check soil erosion and increase the intensity of cropping.

(ii) *Companion Cropping* : It is often used to denote the growing of more than one crop in the same field in a common period of time. For example, Sugarcane may be grown in the main field and borders and bunds be put under crops like wheat and sugarbeet. This is commonly used in growing vegetables, leaf and root vegetables which are often grown along with the main vegetables.

(iii) *Relay Cropping* : In this system rotational crop is planted at the maturity stage of the previous crop. This is found in vast areas of Madhya Pradesh and adjoining parts of Bihar and Orissa, where Keshari dal is sown in paddy fields. This practice of relay cropping has also existed in vegetable gardening. The National Commission of Agriculture is of the view that the more the pressure on land and resources, greater is the need for such types of cropping. The Indian

ping was considered by researchers a primitive practice, but now many researchers regard mixed cropping as the most efficient way of using land. It is of special importance to the small farmers which results in increasing income potential.

**6. Adequate Water Input :**

The key element of water technology is that the water supply should be sufficient and properly applied to absorb the fertilizers. Not only that water should be available in desired quantity its use has to be tailored to the needs of the plant at different stages of its growth. Any amount of water at any stage will not help. In fact excess watering will make these plants prone to damage.

Thus both insufficiency and oversufficiency of water are harmful for hybrid plants. The agricultural practices must therefore change as per technical needs, so that fertilizer and water inputs are applied correctly at specific stages of growth. It will help in achieving the goal of sustenance of higher level of agricultural production over a fairly long period of time.

## POLICY MEASURES NEEDED AND FUTURE DIRECTION :

Keeping in view the importance of water resources for effective and optional use and harnessing them to raise agriculture productivity following policy measures are imperative in the future direction :

**1. Participatory planning**

Through Participatory Rural Appraisal (PRA) technique, different farming situations with varying areas of rainfed and irrigated land are to be identified. Accordingly different technology modules should be formulated in consultation with farmers and accordingly the action plan should be prepared. Dr. C.H. Hanumantha Rao stressed the need for a holistic participatory approach to dry land development programme.

**2. Sustained Community action through local technical knowledge :**

For preservation and use of potential water resources a sustained community action is called for through Watershed Management that

**3. Reduction of Area under Rice and substitution with Non-Rice Crops :**

The rice crop is dominant during the rainy season (70%) but the productivity is very low. Hence, it is quite essential to substitute Khariff rice with some high value crops by crop diversification and particularly under upland and medium land where water stagnation is negligible.

**4. Improvement of Water-use efficiency in Command Area :**

Water should be saved in the Khariff season for use in the Rabi season to have wider Command Area.

**5. Sustainable Production in Rain-fed and irrigated area :**

Appropriate choice of the cropping pattern taking into account water requirement will make effective use of water and improve the intensity of cropping.

**6. Training of Farmers, Planners and Executives at various level :**

All concerned from the field staff to the officials and functionaries must be trained about latest water harvesting technology.

**7. Cultivation of Vegetables, high value cash crops and fruit crops :**

Careful planning and judicious selection of food crops and horticultural practices under different agro-climatic conditions and selective planting in the watershed area improves soil conditions and water management on watershed increases the water holding capacity of the soil, if managed properly. Package of practices for fruit crops of improved varieties of Mango, Guava, Banana, Papaya, Sapota, Custard apples, Jack fruit, Pineapple and Litchi should be undertaken. Cultivation of fruit crops makes economic use of water and is commercially viable for earning a good amount of income.

**8. Extension and Research :**

To create greater awareness and consciousness in the mind of farmers it is imperative to accord priority on extension and training of farmers regarding the use of the package of new inputs and alternative water technology. Establishment of the Water Technology Centre for

(ICAR) is undoubtedly a progressive step in Rainwater management strategies, poverty alleviation and watershed management technology for drought mitigation.

### 9. Water Management on Watershed Basis:

For collection, preservation and effective transmission, Mini watershed and Micro watershed projects should be constructed as done at Tikabali of Phulbani District of Orissa. Innovative strategies on water management and new technologies must be adopted for dryland farming. A new technocratic approach will have greater spread effects. Dug wells should be constructed on the down stream of tanks.

### 10. Everybody's Concern

Water should be everybody's business. Individual, institution, the Government, NGOs, social organisations and every citizen should come forward in protecting and preserving this valuable resource at the micro level.

Effective dissemination, management and use of advanced water technology will no doubt spread the Green Revolution to all the areas and all circles which has so far remained Crop-specific, Region-Specific and Class-specific and will mitigate natural calamities like flood and drought and ensure stability in agricultural production.

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# IMPACT OF WATER HARVESTING STRUCTURES ON CROPPING PATTERN AND FOOD SECURITY

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## I. INTRODUCTION:

In recent years, there is growing opinion on the need to initiate soil and water conservation to develop water harvesting structures and to provide protective and supplementary irrigation particularly to wastelands, dry lands, hill terrains etc. for enhancing production and productivity to meet the rising demand for food grains of the growing population. Water harvesting is usually employed as an umbrella term describing a whole range of methods of collecting and conserving various forms of runoff water from different sources. Particularly for dry land agriculture, it is collection of excess runoff water in a storage tank and using it for better crop production (Sivanappan, 2004). Water Harvesting Structures (WHSs) is a definite way of performing all these activities.

Water Harvesting Structures (WHSs) have been playing a crucial role particularly for irrigation and multiple uses of mankind. During the pre-independence era, in order to provide irrigation facilities much emphasis were accorded by the princely states for the construction of

enough to turn Kalahandi region as the surplus paddy growing region in east India (GIDS, 2001; FA. 2002). Traditional WHSs were known in different names as 'Tankas', 'Pokharies', Talavas', Khadins' etc. in Rajasthan and were mainly used for collecting, harvesting and recycling the runoff water for irrigation purposes (Dhabriya, 1999). In the early 20th century, attempts were made at ravine land reclamation in Gwalior state by constructing check dams and allowing the upstream area to silt up into level cultivated fields (Bali. 1990).

In recent years, efforts have been made in different parts of the country to develop improved measures to harvest the runoff water and recycle it to the cropped area when it is critically required. Thus, the harvested rain water could be utilised for having double or multiple cropping in the areas which are otherwise conventionally mono cropping areas (Singh, 1990). Runoff water which in earlier years were allowed to flow in natural drainage system, now stored in tanks and reservoirs for irrigation. This has a great potential in stabilising the dry land yields by way of collection of runoff water in dugout ponds and transferring the same back into the catchments during periods of moisture stress (Rao and Singh, 1990).

Since the inception of watershed management strategy in 1974, a number of WHSs across the country have been materialised on watershed basis. Though the basic objective of WHSs is soil and moisture conservation, simultaneously it influences the cropping pattern, yield rate of crops cultivated and consequently livelihood sustainability and food security of the people. In a study conducted on Munsiguda mini-watershed in Phulbani district of Orissa, it is found that due to this resource management programme, considerable progress has been achieved not only in crop production but also in improving the socio-economic conditions of the inhabitants. The productivity levels of the traditionally grown crops like maize, ragi, blackgram, green gram, mustard and groundnut have been increased by 132, 50, 48, 38, 78 and 70 per cent respectively (Bhol, Senapati and Dikshit, 1990). In another study on Padalsingi watershed project, it was observed that due to WHS the per capita annual income of people in the catchment area has increased from Rs. 1,587 to Rs. 6,54 1/-, the annual income per hectare increased from Rs. 1,780 to Rs. 7,815/- and the cropping intensity increased from 106 to 150.7 per cent. The adoption of cropping pattern

significant contribution of this project was intercropping of bajra and redgram which was to the extent of 100 hectares (Phadnmis, Biragder Nangre and Ashmatoddin, 1990).

In this paper an attempt is made to analyse the impact of WHSs created under Integrated Wasteland Development Programme (IWDP) in Kashipur block of Rayagada district of Orissa.

**Objectives :**

- ❖ To assess the cropping pattern in study area due to IWDP promoted WHSs. Cropping pattern are analysed in the light of land use pattern, crop shifting, yield rate, return per hectare of land, use of HYV seeds and cropping intensity.
- ❖ To examine the level and extent of food security of the people who are directly reaping the benefits of WHSs created under IWDP Programme and those who are living outside the project area.
- ❖ To assess and compare the incidence and intensity of poverty among the people living both in the project area and outside the project area on the basis of the food poverty line estimated for the purpose.

**Study Area :**

Kashipur block under Rayagada district comes under North-Eastern ghat highland agro-climatic zone of Orissa. Brown and forest soils, sandy loam, loamy and clay medium textured soils constitute the soil structure of the district. Hot and humid type of climatic conditions prevail in the district. Mean annual rainfall remains at 1597 mm and the mean temperature varies in the range of 5°C in winter and 37° in summer.

In response to a proposal of Govt. of Orissa, the National Wasteland Development Board had sanctioned a number of WHSs which were constructed and managed under a centrally sponsored scheme, IWDP in Kashipur block with the motive of checking the adverse effect of

- ❖ Rampant shifting cultivation
- ❖ Large scale deforestation
- ❖ Soil erosion due to undulated topography
- ❖ Decrease in water table

- Indifferent attitude of tribals towards development
- Erratic behaviour of rainfall
- Faulty agricultural practices

In this background, IWDP has been implemented in this region for the construction and management of WHSs. For this purpose 16 micro watersheds have been functioning since 2001-02. In each micro watershed, water harvesting structures have been created with a view to promoting irrigation and other social utilities. (ASCO. Rayagada).

## Methodology

The study is based on primary data collected from a random sample of 100 households selected from four villages- 2 villages in the project area and 2 villages outside the project area of Kashipur block in Rayagada district with the aid of structured questionnaire. Out of these 100 households, 50 households were selected from each village on the basis of systematic random sampling with a random start.

Keeping the objectives of the study in view, 2 villages namely Upparjhire. Jodipai under 2 micro watersheds were selected on SRS basis. To examine the changes in cropping pattern and food security due to IWDP WHS, Baharpadamajhi and Kosabera, the adjoining villages where IWDP programme is not in operation were selected purposively. This is done for the comparisons of the chosen variable of the project area with that of the corresponding figures of non-project area which will provide a clear picture of the changes occurred due to WHS. In another way, adjoining non-project areas acted as a surrogate for the project Area where the IWDP project was not implemented.

Ratio analysis and percentage analysis are employed to examine the impact of WHS on cropping pattern. Food insecurity was examined in the light of Task Force Methodology i.e., if the per capita per day calorie intake of a person is equal to or exceeds 2400 calories, the person is food secured. The per capita calories intake separately calculated for project areas and non-project areas indicates the changes in food-security of the people arising due to the creation of WHS. To analyse the extent of food insecurity of the people in this region, the distribution of households over 8 calorie class are computed. GT index is calculated to know the extent of shortfall of calories intake among all the food insecure households. To assess the changes in the standard

to WHSs, the food poverty line is estimated using the cost of calorie functions as per the methodology adopted by Greer and Thorbeck.

## II. CROPPING PATTERN

The impact of WHSs on cropping pattern is analysed comparing the pattern of crop shifting, yield rate of crops, gross return/ha, proportion of HYV seeds used and the cropping intensity in project area with that of the non-project area.

### Crop shifting

Before IWDP intervention, the farmers were mostly growing the traditional crops like paddy, ragi, minor millets (Khosala, Kangu, Snan), horse gram and hill grams. Due to IWDP WHSs, now farmers are cultivating cash crops and vegetables. A comparison of different crops in project area with that of the non project area shows that in non-project area, the percentage of lands utilised to produce traditional crops like paddy and minor millets is higher than the project area. Minor variation is observed in case of pulses like horse gram, hill gram, Blackgram and Kating. It is further observed that except beans, project area farmers are specialised in producing varieties of vegetables like potato, onion, brinjal, garlic, cauliflower, cabbage, radish, ladiesfinger etc. which are not cultivated in non-project areas. Besides the percentage of land diverted to cash crops like Nizer, Mustard and sugar cane is higher in project areas than non-project areas. It is striking to note that the farmers in project area are replacing traditional crops by vegetables and cash crops which is definitely a positive impact of WHS.

### Yield Rate

The yield rate of different crops cultivated in the catchment areas of WHSs indicate that these rates are higher in the project areas than non-project areas for almost all crops. The percentage deviation in yield rates of different crops in project are termed as marginal changes in yield rate as non-project areas are the project areas without WHS. It is observed that in all the reported crops except pumpkin, cucumber and peanut the yield rate has increased. The marginal yield rate is maximum in the case of horse gram. The crops for which marginal yield rate is more than 200% includes all types of cereals and pulses. Of course in the case of blackgram it is 194.59 which is very much

In case of peanut, cucumber and pumpkin, there is negative marginal change in yield rate the reason being that these are traditional vegetables among the tribals of the area under study. Due to WHS, these traditional vegetables have been replaced by other valuable vegetables.

Besides the new vegetables like potato, onion, brinjal cauliflower, cabbage, radish, ladiesfinger etc. are freshly cultivated by the fanners which were not cultivated before the WHSs. In case of these vegetables the yield rate is very much satisfactory. The performance of nizer, only cash crop of this area, the marginal change in yield rate is to the extent of 63.37 percent. Sugarcane is newly introduced due to WHS.

**Change in Gross Return/hect. of Land :**

Cropwise Gross return (Total Revenue) per hectare of land in project area in comparison to the Gross return per hectare of land in non-project area indicates the marginal changes arising due to WHS. These cropwise marginal changes are analysed by calculating the percentage deviation in gross revenue in project area with that of the non project area.

It is revealed from the study that for all the reported crops the gross return/hectare of land in project area is higher in comparison to the non-project area except cucumber.

The marginal changes in gross return per hectare of land is more than 200 per cent for all the cereals. In case of horse gram it is as high as 368 per cent among all the crops grown in project area. For vegetables the marginal change in gross return varies from 18 per cent to 200 per cent.

**Use of HYV Seeds :**

Table -1 reveals that in non-project area as much as 91 per cent of the crops grown are local varieties and a very small proportion of crops around 9 per cent are HYV varieties. On the other hand in project area, even though the share of HYV seeds is higher than the out side project area, but it is less than the proportion of local crops utilised in project area. The performance of cropping pattern in terms of the use of HYV seeds is not satisfactory on the ground that still there exists

**TABLE - 1**

**Proportion of HYV seeds**

| Sample | % Share of HYV | % Share of local |
|---|---|---|
| Project Area | 40.12 | 59.88 |
| Non-Project Area | 8.75 | 91.25 |

**Cropping Intensity :**

The cropping intensity, as the percentage change in gross cropped area to the cultivable area, for project area and non project area is estimated at 1.33 and 1.18 respectively. Even though the yield rate and Gross Revenue/hect, in two areas vary significantly, but there is negligible difference in the cropping intensity. This is due to the fact that agricultural operations are mostly confined to early Kharif and late Kharif but not extended to Rabi cultivation. It implies that, due to WHS even there is spectacular change in per hectare yield rate and per hectare gross revenue. However, as the WHS are dried up during summer and hence could not be used for irrigation purposes, these provide efficient irrigation during Kharif. Moreover, a comparison with non project area suggests that due to WHS crop failures and drought like situations have been avoided at least during Kharif crops.

## III. FOOD SECURITY :

As Kashipur region has become very much infamous due to starvation deaths in 2001 due to chronic poverty and hunger, it is imperative to study the changes in food security due to WHSs. The inability of a person to eat enough food, stay active and lead a healthy life comes under the purview of food insecurity (M.S. Swaminathan Research Foundation, 2001).

In this paper, we have estimated 'Food Insecurity' on the basis of the recommended average level of per capita daily intake of 2400 calories for the rural areas (The Task Force on projections of Minimum Needs and Effective Consumption Demand, 1993). The households satisfying this criterion are identified as Food secure households.

For assessing the impact of WHSs on food security, the percentage of food secure households in the project area were compared with that

of the non-project area. The marginal changes in Food security due to WHS are the excess of food secure households in project area with that of the non-project area.

As per our estimates only 16 per cent of the households in project area are food secure households. It is heartening to note that all the households in non project area are food insecure households (Table 2 Panel A). Thus, our analysis indicates that WHSs have been able to promote food security only to the extent of 16 per cent, which is the difference of the percentage of food secure households in project area to that of the non-project area.

**TABLE -2**

**DISTRIBUTION OF HOUSEHOLDS ON THE BASIS OF CALORIE CLASS**

| Panel | Calorie Class | % of HHs in Project area | % of HHs in Non-Project Area |
|---|---|---|---|
| A | 2400 & above | 16.00 | 0.00 |
| B | 300-600 | 9.52 | 3.45 |
| | 600-900 | 23.81 | 20.69 |
| | 900-1200 | 26.19 | 20.69 |
| | 1200-1500 | 19.05 | 17.24 |
| | 1500-1800 | 11.90 | 20.69 |
| | 1800-2100 | 2.38 | 10.34 |
| | 2100-2400 | 7.14 | 6.90 |

Combined FGT index = 0.2315

For assessing the impact of the WHSs on the variation of standard of living of the people of this region, we have estimated the food poverty line at Rs.118.70 per capita per month using the cost of calorie function and the methodology followed by Greer and Thorbeck. The food poverty line is found to be suitable for backward areas especially for tribal areas for measuring the standard of living as the non-food consumption expenditure is meagre compared to food expenditure. On the basis of food poverty line we have estimated the GT index separately for

the project area to examine the intensity or severity of poverty. The GT index is 0 2157 for people living in the project area and 0.3316 for people living in the non-project area. This indicates the severity of poverty is much higher, hence, the standard of living is very poor in the non-project area compared to the project area. About 86% of the people in project area and 97% per cent of people in non-project area are living below the poverty line. The GT index is a relative measure of income shortfall and is an indicator of an individual's relative degree of deprivation.

**Findings :**

1. There has been tremendous crop shifting in favour of vegetable crops. Due to WHS, traditional crops are replaced by more vegetable crops as well as to a marginal extent by cash crops. This is a positive impact of WHS.
2. The yield rate of all the reported crops except pumpkin, cucumber and peanut is higher in project area than that of the non project area. Pumpkin, peanut and cucumber are traditional vegetables. Due to WHS, farmers have replaced these traditional vegetables by more valuable vegetables for which the yield rate is very much promising.
3. Gross Return (Total Revenue) per hectare for all the reported crops except cucumber is higher in project area. The marginal effect of WHS on gross return per hectare of land is more than 200 per cent for all the cereals. In case of horse gram it is as minimum as 368 per cent and for vegetables the marginal change varies from 18 per cent to 200 per cent.
4. The marginal change in the use of HYV seeds in project area (though higher in comparison to the non-project area) is sufficient to exhibit potential for the adoption of HYV seeds.
5. The marginal change in cropping intensity is very much insignificant despite WHS. Because agriculture has not very much developed and farmers are confined to Kharif cultivation only. But due to WHS, crop failures and drought like situations have been successfully avoided.
6. Even though due to WHS, there are positive impacts on crop shifting, yield rate, gross return per hectare of land, still there

promote food security only to the extent of 16 per cent. It is due to the very much skewed consumption pattern of the tribals. Tribals spend more on festivals, liquor and entertainment at the cost of food security.

## CONCLUSION

WHSs as a source of irrigation have positively influenced cropping pattern by means of crop shifting from traditional crops to more valuable cash crops. Perceptible changes are noticed in the yield rate of almost all the crops and the gross return per hectare of land is found satisfactory. Adoption of HYV seeds, though moderate, still marginal changes are encouraging. Cropping intensity is not changed because water retaining capacity of WHS is confined to Kharif only. During summer, as WHSs are dried up, Rabi crops can't be grown. Overall impact of WHS on cropping pattern though encouraging, still there is very large scale food insecurity to the extent of 84 per cent. It is because of the faulty consumption pattern of the tribals. Therefore, IWDP Project Implementing Agencies (PIAs) and the NGOs need to be involved to do away with consumption of liquor among the tribals and beneficiaries in the project area need to be taught on savings in the line of micro finance and grain banks. These motivation aspects deserve special attention for the food security of the tribals.

*Acknowledgment* : We are grateful of Prof. N.B. Pradhan, P.G. Department of Economics, Berhampur University for providing constructive suggestions and valuable comments on an early draft of this paper.

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# Traditional Water Harvesting Structures in Kalahandi

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## INTRODUCTION

Water is the lifeline of the living World. In tropical climates rain occurs in a season and rainwater flows through rivers to the ocean. A dry winter and a hot summer follow the rainy season. The summer months are hot enough to cause permanent damages to agriculture as well as afforestation activities in upland. Kalahandi district located in hilly regions of Orissa needs attention for catching water in rainy season. The district has rainfall in the range of 1000 to 2200 mm per year in last two decades. This figure is far less than those of coastal districts, but more than the state average. Because of lack of a proper distribution of rainfall, Kalahandi-agriculture has turned into a weak situation. This leads to famine-like situations and most tribal begin to eat traditional non-nutritious food, and at times, suffer from starvation. The undulating topography, intense rainfall and shifting cultivation along with burning of forest to create agricultural lands by tribals have added to the problem in the form of soil erosion with eventual formation of rills and gullies.

Human endeavour springs from some deeply felt personal needs. The elite mass of the district has felt the deficiency in agricultural practices resulting in migrations of tribals from the district and non-sustainable encroachments into reserve forests and even rejection of newborns. In this perspective, agriculture must be developed and by the by forest must be restored. The Government of Orissa have realized

steps for water catchment in nonarable lands and forest areas with guiles, ditches and water bodies, alike. Water harvesting structure (WHS) has caused certain improvements in the last decade both in the afforestation programme and the prevention of soil erosion, by plantation of timber and fibre and fruit yielding plants. Bunds, contours and gullies are created and protected even by leaving soil and using diversion wires, while many watershed areas are developed, so that rain/spring water could stay beyond the rainy season to support the horticulture and pisciculture, in general.

## TOPOGRAPHY OF KALAHANDI

The new Kalahandi district with 11 blocks has hilly areas with dense forest and inhabiting tribals in about 6 blocks. River Indravati running through the district has a barrage at Mukhiguda and irrigates 26% of plain areas in 5 blocks only. The fraction of forest area is fast decreasing, notwithstanding, the government report on satellite pictures through remote sensing. In fact, there are about 20% of land area of the district under real forest coverage, when the government claim it to be 31.4% in 2003-2004 (which was 40% in 1977). The National Forest Policy, 1988 states that there must be a forest coverage of 33% for a locality with 60% in hilly regions and 20% in plane areas, required for a balanced environment. More often, the available forest area instead of being unentriable, has trees interspersed by hilly agricultural lands with minor cereals and millets. The plant biodiversity is at stake and wild animals are rapidly lost in forest that leads to deterioration of soil and with eventual soil erosion. One problem leads to the other in chain. Deforestation has begun to cause soil erosion and eroded soils do not support new plants ! Quite expected for a hilly region, water steams being steep carry water at a faster rate than normal for a plain area. This prevents percolation of water in the topsoil.

## AGRICULTURE IN KALAHANDI

Agriculture is the main occupation of inhabitants of the district, in general. The variety of food and fruits cultivated in the district in different seasons are the following. (1) Khariff crops, namely, paddy, ragi (finger millet), maize, jowar, jute, *mesta* and many vegetables, namely chillies, groundnut, etc. (2) Rabi crops, namely, sugarcane, sweet potato, onion, garlic, tobacco and oilseeds like, linseed, mustard, til,

field pea etc. The production of both khariff and rabi crops have declined in the non-irrigated blocks for the lack of any proper irrigation facilities.

## TYPES OF WATER HARVESTING STRUCTURES

These can be classified into three categories, natural, traditional and artificial. Natural structures are lakes, which are absent in the district. Local inhabitants create traditional WHS and they have different terminology : (1) Muda, sometimes spelt as Munda are catchment areas with embankments on three sides at the top portion of a stream. Munda looses its water content before February because of its location at a height. (2) Kata, mid sized water bodies lower in height to a munda and have capacity to keep more amount of water for a few weeks more than the later, these are used for irrigation, in general. (3) Ghagrah are such ditches in the middle location of a stream and water is exclusively used for agriculture, depending upon the size, its water lasts up to March, and sometimes it is constructed by local people nearing to the foothills and are used both for agriculture and drinking (4) Bunds are still large sized low land water bodies that supports the village life. Each bund has a source of water in the rainy season. It is not usually used for agriculture. (5) Chahala is a small low land water body that supports both horticulture and agriculture. These traditional WHSs in Kalahandi district have immensely contributed to the sustainable use of ground water reservoir and have supported the forestry activities.

## CASE STUDIES

The following are the three different WHSs in different parts of the district. 1. Khira kata of Sarlanji village under Medinipur Gram Panchayat of Bhawanipatna Block. 2. Risigaon WHS located at Dungripada under Risigaon village and Gram Panchayat under Thuamul Rampur block. 3 Duarasuni kata (Sundhi Munda) situated at Duarasuni Gram Panchayat under Bhawanipatna block.

The Khira Kata of Sarlanji village was constructed in the year 1987-88 with an estimated cost of Rs. 1,00,000 by the Soil Conservation Department, Government of Orissa. The kata is constructed as an embankment of 1700 meters and collects water from a catchment area of 300 acres. It was built to preserve water with a capacity of 101.20 cubic-meters. The WHS has an ayacut area of 10 acres rabi and 80

sluice system (outlet). The WHS has helped in increasing the yield of crop by 100% with a cost benefit ratio of 1:166.

Risigaon WHS was constructed quite recently in 2003-2004 with a cost of Rs. 1,50,000 at Dungripada, Risigaon Gram Panchayat under Thuamul Rampur Block. Constructed by the Soil Conservation Department with 217 meters embankment to conserve water from the catchment area of 75 acres, it has an ayacut area of 68.56 acres covering 11 families of 3 large sized farmlands and many small farmlands. The area which was affected by a 75% drought and the WHS has restored the agriculture. Moreover, the project has provided economic benefits to the people of the locality as 5 families out of the total 21 families have started construction with bricks on the WHS resulting in increase of water holding capacity of the reservoir over the years. It has created a self confidence for the families. In addition, the villagers have gone for pisciculture in the WHS and commercial horticulture in the ayacut area.

Duarasuni kata, known as Sundhi munda was constructed in 1882, by a private initiative so named after Late Apna Choudhury of *sundhi* caste. The WHS was constructed over an area of 32 acres to preserve water from a catchment area. It has an ayacut area of 32 acres of land for both khariff and rabi crops and is extended to about 800 acres of land of 200 farmers during drought situation. The said project also has been used for pisciculture and horticulture orchards.

Four orchards were constructed with varieties of fruit-bearing plants, mango, orange, sapeta, lemon and so on. The embankment has 1400 Kahajur (Phoenix) plant approximately from which people earn a good amount. In 1974 - 75 the kata was handed over to the Government and the concerned panchayat is now leasing the kata for pisciculture.

Lift irrigation is another source of irrigation facility provided in the District by the Department, which is situated just at the banks of river and other small nalahs. At the same time the canal irrigation is mainly concentrated in the five irrigated blocks of the district. There have been a lot of advantages in the WHS over the lift irrigation points of the district as follows :

**Advantages of WHS over Lift Irrigation and Major Dams.**

- The construction of WHS is cost effective, whereas Lift Irriga-

- The WHS do not use pump, thus there is no need for the utilization of power of any sort.
- The most important advantage is that, it does not involve any payment of water tax and the use of water is rather free for the beneficiaries. A majority of the farmers of the district mainly the small and marginal farmers are incapable of meeting the increasing taxes on water, so it is always advantageous.
- The Lift Irrigation is used to extract water from the underground, thus, it is instrumental in reducing the water table whereas the WHS has been instrumental in increasing the water table, as one of the basic objectives of the WHS is to recharge water table of the area.
- The construction of WHS prevents the sand casting and loss of organic matters from the soil, whereas there are no such advantages in Lift Irrigation.
- The canal irrigation facilities mainly concentrated in the five irrigated blocks under the Indravati Project whereas the WHS are the sources in the non-irrigated regions.
- The WHS are instrumental for the promotion of other income generating activities like duckery, pisciculture, brick making etc., whereas lift irrigation do impose burden by the way of water tax, whereas WHS create employment opportunities.
- Most of the work done is WHS is by the use of local labour force. Thus any renovation work involves the creation of mandays labour employment whereas the lift irrigation involves a lot of maintenance which involve technical hands.
- The implementation of the WHS is done by Minor Irrigation, Block, Gram Panchayat and NGOs but the Lift Irrigation is done by Pani Panchayat which involves a lot of complicacies as has already been experienced.
- There is active participation of the people in the WHS whereas it is the Group of users who take interest in the Lift Irrigation.
- Major Irrigation Projects displace a lot of poor and weaker section of people and are not properly rehabilitated. Studies show that the displaced people of Hirakud Dam project are yet to be

- When water supply is provided by a dam project, the soil gets acidic and fertility declines.
- By the construction of big water projects valuable forest area get destroyed.
- The Larger Irrigation projects are highly expensive. Government imposes tax for the realization of the cost component and imposes a burden on the agriculturists.
- Big Irrigation project requires a survey in the beginning and till the end it involves a lot of technicalities and increase the indebtedness.
- The construction of a big project is time consuming, which is usually constructed with borrowed funds, entailing of huge amount of interest payments.
- Major irrigation project gives rise to repetition of a fixed type of crop or monoculture, which causes a decline in the fertility of the soil.
- River dam project is advantageous for a selected group like the big farmers, contractors, engineers etc.

**Disadvantages**

- Some of the WHSs are constructed at not-advantageous points, due to lack of proper selection with the people participation method. Therefor the surplus channel encircling the embankment in some spot gets washed away.
- In some projects, poor maintenance and theft of equipments linked to sluice gates cause dysfunction of the whole project.
- It is seen that WHS ayacut area are lying vacant and the local inhabitants do not properly exploit water.
- The checks provided by the embankment and division wires constructed in some points create problems for the lands nearby as in the case of Satijor WHS No 1 constructed at Ichhapur.

**Suggestions**

- The user groups need to be oriented for the proper maintenance of the project by more contributions from the users insted of the

existing 5 to 10% contribution, so that there will be an element of belongingness for the project.

- Instead of the allocation of funds for the Marudi Mahabandha (pond for the drought eradication) and the funds may be placed for renovation of old WHSs for the provision of better irrigation facilities.
- Some of the WHS areas are reduced by public encroachment and this must be prevented.
- A proper identification of the user group is the most important consideration for the sustainability of the projects.
- There is a need for massive plantation on the earthen embankments for a better soil holding capacity. Last year Soil Conservation Department has started planting Lemon grass on the embankment. There is a need for the planting of the other varieties of trees for better tree coverage for the sustainability of the project as well as for the economic benefits to the beneficiaries.

## CONCLUSIONS

In addition to the above advantages the WHS has been constructed serving the purpose of feeding the people of the district. Due to the lack of proper initiative, the renovation of the projects has not been taken up properly, which leads to deterioration of a number of projects as these have been filled in by sand casting and by the by, broken surplus channel leads to soil erosion by rain washout. The efforts are on by the Soil Conservation Department to bring about the renovation works for the improvement of the traditional water bodies. The local initiatives are highly required for the success of the WHSs in Kalahandi.

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# Problems And Prospects Of Water Harvesting In Orissa

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*May water from wells give us prosperity.*
*May stored water give us prosperity.*
*May direct rain water give us prosperity.*

-Atharva Veda-.

Water is undoubtedly one of the most important natural resources and is vital for all living Organisms, major ecosystems and sustainable development. While water is a renewable resource, its availability is largely determined by climatic conditions and technology that permits its exploitation and also by the efficiency with which water is conserved and used. India, being an agrarian country depends a great deal on water for production of food and economic development. The rural populace of India consumes water mainly for two purposes, i.e. for domestic use which includes water for drinking, sanitation etc. and for irrigation. It is increasingly being felt by the Government that these needs can not be fulfilled without launching demand - responsive, community-led and participatory schemes. Hence, schemes like *Swajaldhara* and institutionalization of participatory irrigation management and water users' Associations are encouraged.

Meteorologically India gets abundant rainfall, yet we are unable to make full use of it due to some natural constraints. Our future developmental activities are estimated to require about twice the amount of fresh water currently made use of . So extensive and effective water harvesting methods are necessary to overcome the shortage to some extent.

India is one of the wettest countries of the world with an annual average rainfall of 117 cm over the plains- about one and a half times

At present, in India under the economic restructuring programme far-reaching reform measures have been undertaken in irrigation sector by bringing about profound institutional and organisational changes by implementing participatory Irrigation Management (PIM) through formation of water users Association (WUA) or Pani Panchayats and transferring them the responsibilities of operation, maintenance of irrigation system, distribution of water among water users and collection of water rates.

Under the constitution, water is a state subject. Hence water resources development is regulated primarily through state plans. The role of the centre is in the form of overall policy formulation, coordination, guidance and general infrastructural, technical and research support.

The harvesting of water refers to collection and storage of rain water and other allied activities aimed at Prevention of losses through drain off, evaporation and seepage etc. Rain water conservation makes droughts less severe, rivers have water through out the year and soil holds greater level of moisture and consequently there is increase in agricultural yield and thus economic conditions of rural poor is appreciably improved.

Shortage of water, quality of water and management of water are three serious issues which require our attention. The water related problems should be tackled in an integrated manner keeping various aspects in view. However, the biggest barrier seems to lie in our basic attitude which tilts in favour of meeting the immediate needs rather than taking a long term view.

Today we realize (as never before) that in the context of a growing population, we cannot afford to bank upon surface water, ground water and the like alone for the pressing drinking water needs of our people, more particularly in the villages. It is high time we go about in a systematic way for the collection and storage of rainwater, even where rainfall is relatively scarce and intermitted.

Water shortages will continue in coming years due to an interplay of environmental and policy factors and in order to overcome them, water harvesting has to be made mandatory on the basic premise 'catch water where it falls' meaning creating all kinds of storage- big and small.

Rain Water Harvesting includes water infiltration Pits, Contour Trenches, use of unused wells and ponds to collect rain water.

Infiltration Pits and contour Trenches are less expensive than others hence they may be widely made use of at low cost budget.

A Conjunctive Water Utilization Policy in Canal Commands rain water harvesting in the rain fed upland area, alleviation of water logging in canal commands and low lying non-commands and scientific cropping pattern for sustainable use of water resources are important factors that need immediate attention of users as well as suppliers of water resources for higher production and productivity in a sustainable manner in Orissa.

**Main Rivers in Orissa**

| Name of the River | Length (Kms) | Area covered (Inside Orissa only) (square kms) |
|---|---|---|
| 1. Mahanadee | 851 | 65628 |
| 2. Brahmani | 499 | 22516 |
| 3. Baitarani | 365 | 13487 |
| 4. Kolab/Sabari | 450 | 10300 |
| 5. Rishikulya | 146 | 8963 |
| 6. Bansdhara | 221 | 8960 |
| 7. Indravati | 125 | 7400 |
| 8. Budhabalanga | 164 | 4838 |
| 9. Nagabali | 217 | 4500 |
| 10. Subarnarekha | 395 | 2983 |
| 11. Bahuda | 73 | 890 |
| Total: | 3506 | 150465 |

**RAIN FALL IN ORISSA**

**For 2003-2004**

**No. of villages (2001 census)**

| Inhabited | Uninhabited | Total | Normal Rain fall (M.M) | Actual Rain fall (M.M) | Deviation from Normal (M.M) |
|---|---|---|---|---|---|
| 47829 | 3820 | 51349 | 1482.2 | 1658.7 | (+)176.5 |

Orissa is no doubt rich in Water resources. Statistics show that Orissa, has 4% of country's land area but 11 % of India's surface water resources. Orissa is enriched with 95 lakh hectare metre surface water and 20 lakh hectare metre ground water. We have 65 lakh hectare cultivated land in Orissa and the water resources available can provide irrigation to 59 lakh hectare cultivated land. But, unfortunately till today, only 25 lakh 42 thousand hectares cultivated land get irrigation in Orissa.

The Pani Panchayat Bill has been implemented in Orissa from April 2002. By September 2003, 8715 Pani Panchayatas have been formed and these covered 7 lakh 20 thousand hectare cultivated land. Orissa Government targets 12 lakh 89 thousand hectare cultivated land under irrigation in this scheme by the end of $10^{th}$ plan period. No doubt it is a wise step to encourage management of water harvesting by the local people in Orissa. But, the main defect of this programme is its top down approach to solve localized grassroot problems. There should not be any imposition form the above. The change should be spontaneous and demand driven based on bottom-up approach through local initiatives and people's participation.

## STRATEGIES FOR WATER MANAGEMENT:

1. Water has to be managed as commodity in exactly the same way as any other resource.
2. Supply of water to consumers should normally be based on the principle of effective demand, which should broadly correspond to the standard of service that the users are willing to maintain operate and finance.
3. In rural areas too, water tariff is to be levied where operation and maintenance are needed.
4. Private sector efforts for watershed projects be encouraged.
5. Local bodies should be made responsible for the operation and maintenance.
6. 'Village Water Committees' should be actively involved in watershed management.
7. Women should be made focus of users.
8. The educational Programme should be directed to change the practices relations to water handing, its disposal, storage as well as in food preparation.

9. Collection and processing of rain water in the village itself for daily use.
10. Sanitation and clearing programme.
11. Afforestation and tree plantation.
12. Construction of tanks
13. Digging up of new wells.

The following guiding principles should be kept in mind while planning and implementing watershed management programme:

1. Watershed management should become people's movement and governments, donor and other funding agencies, NGOs etc. should participate in people's programme by providing funds, technical advice and social stimuli.
2. Conservation measures should be considered as a means and production system as an end.
3. Mixed farming systems should be promoted and role of livestock should be appreciated.
4. Water conservation should be treated as a starting and central point in watershed management.
5. Low cost, simple and vegetative conservation technology based on indigenous technical knowledge should be promoted with watershed community's initiative and with minimum external support.
6. Changing the role of the government from provider to facilitator.
7. Prioritizing hygiene and sanitation.
8. Utilizing the land according to its capacity.
9. Improving infrastructure facilities for storage, transport and marketing of agricultural produce.
10. Setting up of small scale agro-based industries in rural areas.

If watershed management has to become a people's movement, technologies would have to be simple, low cost and should be based on vegetative measures which are self-regenerative. There are arguments in favour of watershed management which could ensure supply of water to every field, remove hunger and poverty from poor areas, providing

environment. Watershed management is also described as a programme that holds the key to solve problems of seasonal unemployment, which could improve economic conditions of poor/ alleviate poverty. It could also facilitate better environment/ecological conditions and create equitable conditions for sustainable agriculture.

The following are some major challenges frequently confronted by the planners in watershed planning.

1. Political views may differ considerably from those of technical persons on types of management work, priority areas and timing.
2. An ideal physical plan or a most effective work may not always be socially receptive by local communities or farmers.
3. Sometimes, intangible benefits of a watershed programme may outweigh tangible benefits, whereas the former cannot be easily assessed in monetary terms.
4. The bottom-up planning cost a lot of time and energy in the watersheds, and due to existence of illiterate farmers, the involvement of local communities in planning process appears to be a necessity.

There are no universal answers to these challenges. Each of them should be carefully examined in the context of the given conditions and the existing environment.

Watershed Problems can generally be grouped into several categories as follows:

1. Physiographical problems, e.g. steep slopes, heavy rain, excessive runoff, problem soils etc.
2. Resource use problems e.g., shifting cultivation, forest destruction, fire, overgrazing, uncontrolled mining, poor road construction etc.
3. End problem e.g., erosion, sedimentation, flood, water pollution, water shortage etc.
4. Socio-economic and other problem e.g. illiteracy, low acceptance of innovation, labour shortage, land tenure, poor infrastructure etc.

Detailed survey and investigations should be centered on the major watershed problems identified during preparatory missions or preliminary

Data required for watershed planning vary according to management objectives, watershed problems and given conditions. Generally the following categories of information are needed:

1. Physiographic data including location, elevation, sub-watershed, soils, geology, land forms, slopes, drainage pattern etc.
2. Land use and cover types including forest, grass/range land, cultivated land, orchards, wild life reservations, recreation areas, urban, water area, land capabilities etc.
3. Climate and hydrology including precipitation, wind, evaporation, temperature, stream flows, floods, erosion, sediment etc.
4. Socio-economic data including demography, land tenure, farming systems, education, infrastructure, human resources, farm enterprises, rural employment, production, income, marketing, transportation, credit, labour etc.
5. Institutional and cultural data including policy and administration, extension services, farmers, organizations, community and private groups, traditions, religious and cultural practices, acceptance to innovations, group action etc.
6. Management oriented data including watershed problems, environment impacts, land management techniques, treatment needs, unit cost, sectoral cost cash flows, work schedule, financial arrangements, expected benefits and results etc.

In a small developing state like orissa, where professionals are scarce, a body consisting of an engineer, an economist, a sociologist and a forester or agronomist together with some field assistants may do a satisfactory job. The general techniques employed for such field oriented surveys include simple statistics and sampling, air photo interpretations, mapping and design of questionnaires etc. most of which can be taught and learned by sub-professionals or technical assistants.

**Selected activities under watershed management are:**

(a) Soil & water conservation by contour trench, gully plugging, bolder checks, contour bunds, nala, bundhan etc.

(b) Plantation for horticulture, fuel wood and others.

(c) Fodder development

(d) Income generating activities like nursery development, fisheries,

collection of minor forest produces, pisciculture and stone crushing.

A micro-watershed is of approximately 500 hectares. It may comprise a part of a village or beyond the boundaries of a village. Before designing any programme for training, it is essential that the people who need to be trained are identified. Training may be imparted to members of Gram Panchayatas, village level government functionaries, user groups, Self Help Groups,. Women, Watershed Association members, Watershed secretary, Project implementing agency, Watershed development Team, Block and District level officers and members of District Rural Development Agency.

The basic concept of training under Participatory Watershed Management is to enhance the capacity to learn and innovate in a changing environment. Training means acquiring skills and the capacity to deal with challenges and problems on a regular basis.

A number of innovative training programmes need to be developed to provide interesting options in Watershed Management.

1) Awareness generation is achieved through various means like mass media, audiovisuals and workshop visit to farms and other related activities.

2) Capacity building of NGOs and village groups is to be institutionalized so that over a period of time they can look after the project on their own.

3) Mistakes can be overcome by way of learning. People who are actually doing things do develop the capacity to innovate, improvise and adapt fairly quickly.

4) Action research learning by reviewing and reflecting on its activities and impacts. Feed back is the last key word.

5) Promotion of general equity by enhancing the self image and skills of women is possible by providing technical training to women, visit of women to Watersheds managed by them and resource persons among trained women in Watershed Management.

To make the participation of people more realistic the

1) Implementation of programmes that give quick, visible results like harvesting structure, (pond) irrigation system, intensive area cropping.
2) Locally unavailable materials are to be made available for the people for carrying out their income generation activities.
3) More emphasis are to be given to the capacity building activities providing them knowledge based inputs.
4) Gender and caste equality should be adopted in dealing with situations arising out of conflict.
5) Locally available technologies are put to use before imposing any external technology.
6) Regular awareness and training camps are to be organized to build up confidence and skill of the local people.
7) Local seasonal and crop calendar are to be taken in to consideration while implementing the project.
8) Use of participatory learning process helps in getting feedback and free flow of information.
9) Recurring visits by project Implementing agencies help in getting the work done smoothly and speedily.
10) Equitable distribution of common shared resources should be done.

Watershed technologies will gain acceptance among the rural masses only when these socio-economic considerations are adequately addressed. A strong data base is needed at least at the district level to ensure effective coordination between various governmental and non governmental agencies, other establishments of a planning, monitoring and evaluation cell at the district level, surveys and their documentations before planning, development of alternative set of technologies and the active involvement of local people in preparation, execution and maintenance of structures in a Watershed. Otherwise huge amounts of scarce resources could be wasted on ill conceived, poorly designed and badly executed Watershed programmes.

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# Environmental Aspects of Water Harvesting
## Issues & Interpretations

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### INTRODUCTION :

Water harvesting as a standard of water resource management is emerging as an innovative and sustainable method of water use in India. It is a matter of deep concern that the water level is fast decreasing in most parts of the country. Improper utilization of scarce water and huge surface water runoff not only lead to fast depletion of water resource but also give rise to serious environmental problems. Besides, and the considerable inequality in the use of water for agricultural purpose, the random use of chemical fertilizers and pesticides severely pollutes the drinking water source which ultimately affects the environment.

In the light of the emerging problems, this paper makes an attempt to analyse the environmental effect of the water harvesting system and suggest measures for planned use of water and its future sustainability taking into account the possible environmental implications of water harvesting. The paper is divided into four sections. Sections I makes an assessment of the issues relating to the pattern of water use in India. Sections II analyses water harvesting structures and methods of management. Section III deals with environmental implications of water harvesting and conclusions are presented in section IV.

### (I)

### PATTERN OF WATER USE AND ISSUES

The surface drainage system leads to huge discharge of water to the sea alongwith the sediments. This leads to different environmental

problems and threats to the ecosystem and biodiversity. The topographic features also present water scarcity in many parts of the country. However the system are not yet developed to make stock of the surface water to be used during the time of scarcity. The uneven stock of ground water and their unequal use is a (due to verities of reasons) threat to the water use in future. Similarly, the depletion of ground water level as predicted by the experts may give rise to acute water scarcity in the next decade. Future ground water scarcity areas include even some parts of the coastal Orissa– what to speak of the present water scarcity areas of the western Orissa. The adverse situation will not only be accentuated in case of drinking water but also, scarcity itself for purpose of agricultural, industrial and construction uses will be very critical. Insufficient water use in mining and industrial areas will give rise to water and air pollution which appear to be dangerous as it affects the growth process and its sustainability.

United Nations Water Development report shows that India ranks 133rd among 180 countries listed in terms of water availability and in terms of water quality, it is almost at rock bottom ranked 120th among the 122 listed countries. India accounts for 4% of the world's water resources and 16% of the population. Both shortage and pollution of water create indeed a situation of crisis. Environmentalists fear that India would be water stressed by 2020. In recent years many water related projects are announced and have gained prominence in the political agenda, Union Budgets in the past and also in the Common Minium Programme of UPA govt. including feasibility of linking the rivers in the country. The water resources ministry has set up a high level committee to advise the government on the issue.

However, at least three important issues seems pertinent viz. restoration of water bodies, recharging of ground water and rain water harvesting. The Water Resources Ministry increased allocation of funds from Rs. 3,700 crores to Rs. 5,500 cores. About Rs. 250-200 crore is also expected for the restoration of water bodies. According to the ministry "there are five lakh water bodies in the country dedicated to agricultural needs. Many of them have dried up due to misuse. It is necessary to bring them back into the irrigation- fold". The project will

made a provision for Rs. 1,000 crore desalination plant in Chennai to solve the city's drinking water problem, but there was no progress on the front. However, more funding for the project is required for successful implementation.

The ground water source provides 80% of the domestic water supply in rural areas and about 50% of the urban and industrial uses. So over-exploitation of ground water is inevitable and may lead to rapid depletion. The policy makers should plan for ground water recharge. The other side of the coin is rain water saving. A concerted drive towards rain water saving through public measures alongwith the individual initiative to store rain water in their lands for use in summer season may be of immense use. This will meet the water demands and will put less pressure on the use of groundwater source.

The water runoff in different states are different. For example, extensive use of tank irrigation system in Andhra Pradesh, Karnataka and Maharastra present low rate of runoff and misutilization compared to the coastal and north-eastern states. Because, it ensures higher rate of sustainability in the use of water for irrigation purposes. There is need for the states to save rain water for the use in scarcity time. State initiative and incentives should be provided to the individuals to undertake water saving measures at their own lands. Undertaking of individual water saving projects should be backed by effective management and monitoring mechanism to aid and advise the individuals for sustainable use. These will be more cost effective than that of the bigger public projects.

## (II)

## WATER HARVESTING PATTERN AND POLICIES

Water is categorized into (a) rainwater, air, moisture, dew, snow melt which are free from salt and known as youngest water, (b) ground water, surface water etc. which contain salt due to its longer interaction with soil and rock formation (weathering progress) and evapotranspiration known as older water, (c) ocean/sea water which contain more of salt due to its longest interaction with soil, rock formation and evaporation known as oldest water.

Surface water is flown through two types of river viz. perennial and ephemeral. Ephemeral rivers flow during rainy seasons and drains rainwater to the sea. But in other seasons the river does not contain any water. The overflow of these rivers due to excessive rainfall causes flood instead of meeting any effective requirement. The perennial rivers drain the rain water in rainy season but carries the flow of water due to the melting of snow in the summer. These perennial rivers are used for whole of the year in meeting the requirements for irrigation, navigation and other purposes.

Here the problems are two fold. First, over-exploitation of ground water in unscientific manner and second, surface runoff of water with sediments to the sea negatively affects the ground water level. So it is suggested that the ephemeral river courses should be scientifically used for our water requirements and groundwater bodies, which are fast depleting, should be recharged. This will provide employment to rural youth and will develop the land resources, forestry, and horticulture on community basis. The projects should be taken up with ephemeral (seasonal) streams. The idea is that if we are able to check certain quantity of monsoon water runoff in the ephemeral channel, automatically floods in the perennial rivers in down stream areas will be controlled. There will be less contribution of surface runoff along with sediments to the ocean (Singh : 1996). Pattern of water use in different parts of the country show the inherent inefficiency and unevenness and scarcity in the western and central parts. The scarcity areas of water use system show some degree of problems in management and planning but the water surplus areas present more of complacency (the superfluous feeling of water surplus for all time to come) rather than the scarce water use planning. The perennial river proximity shows relatively more surface drain-off and over utilization of water. The mechanism of water harvesting/water saving is quite inadequate and a great deal of inequality in the water use affects the agricultural productivity, drinking water supply and water treatment in the mining and industrial operations leading to environmental damage and low sustainability.

Individual initiative in water harvesting is more cost effective and eco-friendly than that of the public initiative. It is because of the fact

that the small private water harvesting network is relatively better managed than the public initiative in controlling water runoff in the ephemeral river courses. In case of individual water harvesting, the external effluents or wastages are less since the sources of pollution is known to the individuals. With little efforts and small expenses, the harvested water can be purified if it is used for drinking purposes. But, the water harvesting devices in the form of large water storage is less cost effective and more prone to various sources of pollution. Thus, consciousness among people should be created so that they can meet their requirements and there will be less burden on public exchequer. There are examples of individual initiated water harvesting techniques in scanty rain fall areas and desert turning out into greenery within a period of two decades.

Initiation of water harvesting projects and later on discontinuity is a sheer wastage of resources. Most of the water bodies are defunct (as admitted by the Water Resources Ministry) due to over-utilization, rather, misutilization of resources over the time. These projects are either ill-managed or due to insufficient allotment of funds the projects were discontinued. So, in view of the present situation, more resources should be created and the costs should be met from raising of public revenue.

## (III)

## WATER HARVESTING AND ENVIRONMENT

Water harvesting structure has a strong merit of environment security especially in respect of pollution control and quality drinking water. The surface water runoff and ground water depletion lead to imbalance in the ecosystem and bio-diversity. The surface water run-off is responsible for reduction in the sea network and depletion of marine resources. The extinction of some eco-friendly species and reduced fishery and forest resources are some of the major adverse environmental implications. Because these affect the growth processes and social sector development.

The water run-off to the sea through the rivers and canals are

flood control rather than environmental concerns. There is no permanent measure to control flood even though a good amount of resources are diverted towards flood control and very small amount is diverted to the related pollution control aspects. On the other hand depletion of ground water as a result of overuse reduces the stock of relatively safe drinking water.

In case of agricultural operations, pesticides and chemical fertilizers are applied which run to the river, ponds and enter into the ground. This reduces the quality of drinking water and causes water pollution. Similarly, the insufficient water treatment in the mining leads to air pollution. Industrial wastages are left to the rivers which cause water pollution. As most of the threats to human health are from water and air pollution, inadequate water treatment in mining and lack of water harvesting/saving is a positive danger to the environment. The tsunami havoc of December - 2004 is a burning example of imbalance in the ecosystem which took away a sizeable toll of human life and rare species. This will definitely change the pattern of water management programmes in the country. The attention, as is expected, will be diverted more towards flood management and erosion control projects. The coastal erosion will be arrested with sea walls and other programmes like public-private partnership in R & D projects, rain water harvesting and ground water recharge plan to tame the situation of water scarcity. The industry association like CII will provide inputs on a "Zero water Industry" initiative which means industry using water should replace it through recycling. The ministry said that a "polluter pays" policy may be evolved (Economic Times : 14.02.2005).

## (IV)

## CONCLUSION

India holds a very miserable position in terms of water availability and water quality as per the UN's World Development Report. The report warns that India would be water stressed by 2020. The water use pattern and water harvesting structure of the country are highly ineffective. The surface water run-off and reduced level of ground

The paper suggests that surface run-off of water and gradual depletion of ground water need emergency treatment. The system can be improved by evolving effective management and monitoring mechanism of water harvesting and water saving for future sustainability and improvement in the environment. The analysis provides some suggestions like :

- Rain water harvesting by individuals at their agricultural and residential lands should be encouraged.
- Adequate consciousness among the people be created through dissemination of information and the emerging situation of water scarcity.
- The over-utilization of ground water should be prevented/reversed in future.
- People should be encouraged to harvest roof water in sintex of suitable capacity or underground covered reservoirs.
- Water harvesting projects be monitored and reviewed by the experts and necessary steps should be taken for continuity and sustainability.

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| 1973 | Panchayat College | Bargarh | Prof. R.C.Patnaik |
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| 1987 | Kendrapara College | Kendrapara | Prof. Benudhar Bhuyan |
| 1988 | S.C.S. College | Puri | Prof. Gyana Chandra Kar |
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*Printed at :* **The Nabajivan Press,** Chandnichauk, Cuttack – 2