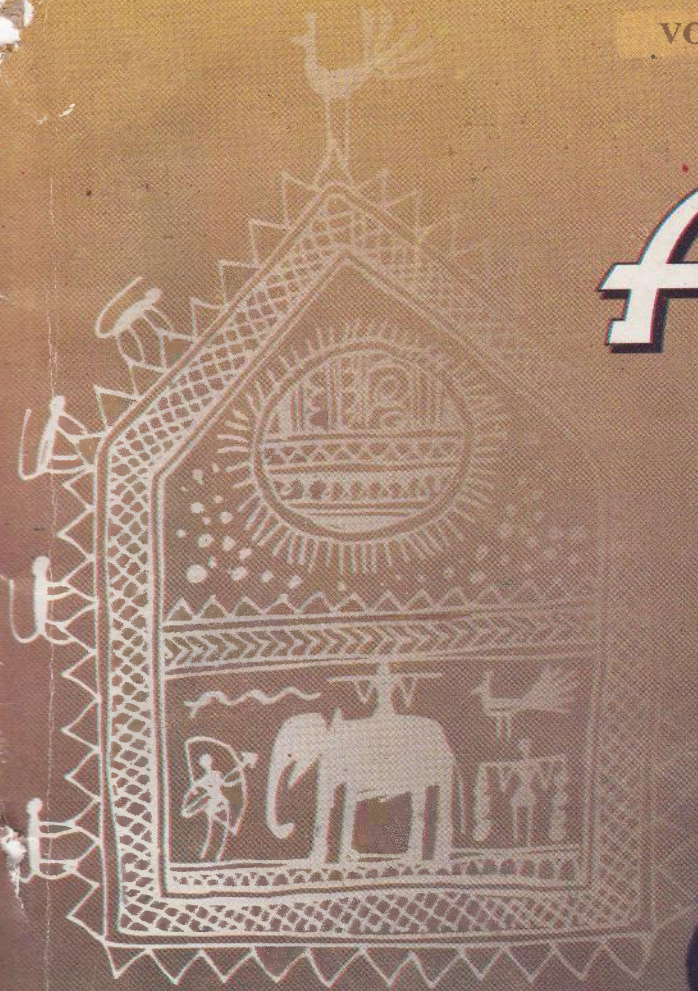
VOLUME 45 NUMBER 1 JUNE 2005

# ADIVASI



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BASCOM, W.R. 1951 Yoruba food, Africa 21.
BOVILL, E.W. 1933, Caravans of the Old Sahara,
London : Oxford University Press.
DOGGETT, H. 1965. "The development of the cultivated sorghums", in Essays on crop plant evolution.
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# ADIVASI

VOLUME 45 NUMBER 1 JUNE 2005

## CONTENTS



**Journal of Scheduled Castes & Scheduled Tribes Research and Training Institute (SCSTRTI) Bhubaneswar Orissa India**

# Editorial

In the present volume of ***ADIVASI*** Journal, as many as seven research papers pertaining to various themes contributed by experienced and eminent scholars have been published.

- The first paper, "***The World of Saora Medicine : A short note on Belief System, Medicine and Medicineman***" deals elaborately the herbal medicines used by the Saora and their methods of preparation and application in curing diseases and ailments.

- The second paper, "***Street Children-their Occupational Hazards and the need for Social Intervention***" is based on a study conducted in the city of Bhubaneswar. The paper highlights the occupational pattern, income, nutritional intake, educational status, disease profile of street children with suggestions for improvement of their living conditions and to protect them from exploitation.

- The third paper, "***The Didayi Development Perception***" is based on a empirical study conducted among the tribe. The paper highlights socio-cultural, political and economic life of the community. Besides, the paper focuses on development interventions carried out among them by the Micro Project vis-à-vis the development perception of the community on their own standard of thinking.

- The fourth paper, "***Tribal Development through Micro Project***", attempts to examine the adequacy of guidelines formulated by Government for development of PTGs. Besides the paper also analyses the factors contributing to the success and failure of the schemes with suggestions for improvement in functioning of the Micro Project.

- The fifth paper, "***Shifting Cultivation and Tribals of Orissa: A Study***" deals mainly with the area under shifting cultivation in different districts of the State highlighting the proportion of tribal households dependent on shifting cultivation in different Micro project areas with some concluding remarks on control of shifting cultivation.

- The sixth paper, "***Health Systems Reform and the Role of NGOs: An Evaluative Study of the Reproductive Health Experiment in Tribal Region of Orissa***", elaborately describes the impact of various health services provided by KHOJ Project and the impact of different health sector schemes on the tribal people with suggestions for better implementation of such schemes.

- The last paper, "***Impact of Deforestation on Physical and Chemical Nature of Soils in two Tribal village Ecosystems on Eastern Ghats of Orissa- A Comparative Study***", is based on an empirical study conducted in two tribal villages that deals with the effects of deforestation on soil nutrient content( physical and chemical) through scientific analysis .

I am extremely thankful to the paper contributors for their valuable contribution to the Journal.

I also express my deep gratitude to the members of the Editorial Board of the journal for scrutinizing and editing the articles before publication.

**Dated, the 27th June, 2005** **Gopinath Mohanty**
**Bhubaneswar** **EDITOR**

# THE WORLD OF SAORA MEDICINE: A NOTE ON BELIEF SYSTEM, MEDICINE & MEDICINEMAN

*G.N.Mohanty*
*A.K.Maharana*

People (human beings) are not only intelligent but also social animals, which through ages have developed the technique to harness the natural resources for their very existence. People are material using animals (Larkin, Petere, Exline-1980: 170) and a section of it living in so called marginal areas like mountain slopes, rain forest lands, desert fringes etc. – the tribes, eke out a living with much difficulties at the expenses of their body energy. The tribes according to the general features like a) eco –system, b) traditional economy, c) supernatural beliefs and practices and d) recent impact due to developmental activities may be classified into six cultural types, such as 1) Forest Hunting type, 2) Primitive Hill Cultivation type, 3) Plains Agricultural type, 4) Simple Artisan type, 5) Cattle Herder type and 6) Industrial – Urban type (Vidyaarthi-1984: 272). Tribes belonging to each such group have almost similar socio –cultural patterns and have similar efforts to mitigate social, economic and cultural as well as health related problems.

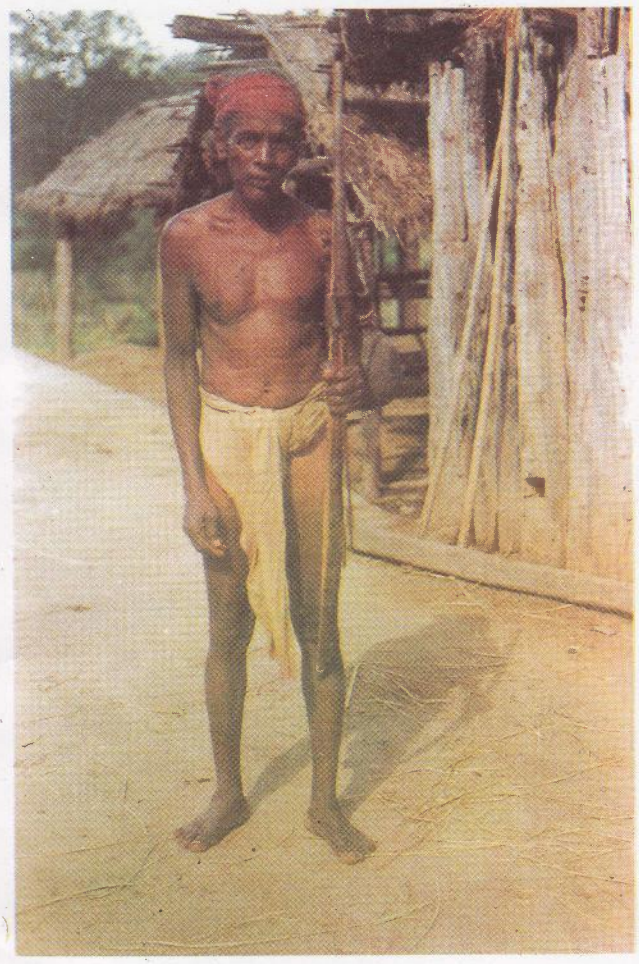
The Saora- a tribal community of around 4.70 lakhs strong, belonging to the cultural type of 'Primitive Hill Cultivation'; are of smaller body stature, hard working and though not strongly built like the nighbouring Kandha, have better body construction compared to the North Orissan tribes. They are very efficient in climbing and walking on hills (Mohanty,1990: 246). The geographical attributes and natural environment have made the Saora expert in the fields of collecting (of dry matters of plant origin) as well as culturing (of grass as well as arbour) activities. The very word Saora owe to 'Sagories', a scythian word meaning axe and 'Saba-Roye', a Sanskrit word meaning carrying a dead body (hunted animal) links the tribe with hunting and collecting activities in the distant past. Saoras practice 'Intensive Subsistence Farming' and the 'Natural Stuffs' available near by, not only provide them adequate nutrients but also pull the community through peak and lean seasons. The period of sufficiency and deficiency (in terms of availability of nutrients) and protection and exposure (in term of facing the nature's wrath) put the Saora into various forms of body ailments – seasonal, chronic, superficial or deep.

Like any other tribe the Saora measures health or ill health of a person in terms of food intake and work output. They almost equate health with happiness and disease / ailment with agony and sorrow. To them health is a boon and ill health (disease /ailment) a bane of nature consisting of outer physical environment as well as the unseen environment comprising of deities, spirits, evil forces etc. However, at present they are buying the idea that man made environment (accumulation of silage water, farm yard and cattle shed refuse etc.) is one of the causants of the disease. They are yet to reason out that diseases occur and spread due to harmful bacteria, microbes and germs.

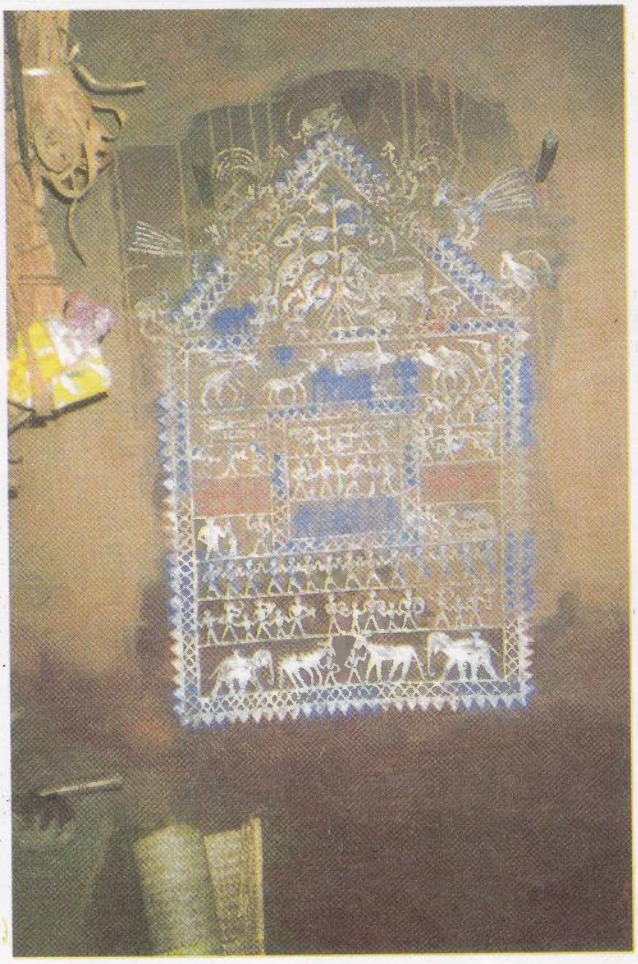
The Saora classifies ailments/ diseases according to the time period of suffering. Almost all short duration ailments are clubbed together as 'Natural' diseases and longer duration ailments as 'Supernatural' diseases. They do not consider a person impaired temporarily by wound, muscle cramp, allergy, joint pain, cough, joint inflammation and even bone fracture a patient. The modern classification of diseases namely, a) Natural, b) Supernatural, c) Interpersonal and d) Emotional (Press, 1982:185) is partly supported by the Saora belief system (existing of first two types of diseases). Their thought process also agrees that disease is a disorder in body and is less somatic rather than a 'disorder in organism and may either be somatic or psychic' (Deb Burman ,1986: 185). Unlike the Santal, the Saora rarely come into the term that 'the action of sorcerer on some part of the body or some objects once connected with the body of a person is one of the causes of diseases' (Rever 1924: 5-18). They believe that sorcerers are in possession of super natural power that counter evil powers but not the evildoers. They also believe that the sorcerers of their community never indulge in black magic. They rather help warding of the evil powers.

**Diseases:**

Saoras suffer from different kinds of diseases because of induction of external agents into their internal organs (effect of food on digestive tracts as well as smoke and dust on respiratory tracts) and on body surface. Cuts – minor or deep, sprain, inflammation of joints, ringworm, fungal infection, infection at the corner of mouth and finger nail etc., that are easily identified because of their visual observation. These ailments/ disorders/ diseases are very common in Saora belt. Any impairment of the internal organs is considered as the work of supernatural power and is hard to cure. The gynaecological problems / disorders are very common among the Saora females. These ailments along with the pediatric problems are considered as the work of the evil eye or machination of evil unseen forces. Other common diseases found among the Saora are malaria, gastro –intestinal disorder, diarrhoea, dysentery, respiratory troubles (bronchitis), hookworm and roundworm infections, skin diseases etc. Yaws, leprosy, tuberculosis and filaria are not found among them (Patnaik,1989: 27). Of late stray cases of TB are found in Saora belt. The reason might be excessive labour not in commensuration with the food intake at the distant shifting cultivation fields. Cases of sexually transmitted diseases are not found in Saora belt because the tribe does not indulge in sexual excesses (extra marital or unnatural) secretly on hills or in lonely places for fear of offending the gods and thereby inviting their anger in shape of misery and disaster (ibid – 1989: 39). Occasional bout of diseases like measles, malaria, diarrhoea etc. in the form of epidemic are felt in the Saora belt because of the filthy environment. The tropical climate (of the Saora belt) and poverty (of the Saora) help to produce a very great numbers of diseases. The warm moist climate not only help insects that transmit parasites to breed well but also produce staple food (roots, fruits, cereals etc.) which have very low protein content but provide bulky diet with low energy (Byrne & Bennett- 1986:1). These cultured and collected dry matters are processed/ cooked unhygienically by the Saora and consumed. This indirectly promotes occurrence of diseases in epidemic or endemic form. It is also observed that some social and economic factors like beliefs, practices, education, occupational pattern, food habits etc. cause the spread of diseases.



A Saora Male



Saora Ikon (Anital)

**Medicine:**

Saora medicine is indigenous in character and is classified under the sub - section of 'Folk Medicine' in the domain of 'Traditional Medicine' as distinguished from the Modern Medicine (Mohanti- 1996: V). It can also be termed as 'Oral Traditional Medicine'. The medicines in general, are water based and are very simple in terms of ingredients used, methods of preparation as well as their administration to the patients. The ingredients (mendicants) are hand picked by the providers (secular or traditional) from locally available bio- sources like plants and animals (***Annexure-I***). Some of the abiotic ingredients like water, soil, pebbles are used for preparation of simple or complex medicines. In such medicines water is used as a base. Saoras never use oil, fat and even honey as base material while preparing complex medicines. Unknown to the 'Aurveda' system of medicine, Saoras use medicines in form of Mani, Mantra and Ausadha. Mani-not the precious gemstone but a body adoration made out of some 'Charm Objects', is kept close to the skin to facilitate cosmological effects and enhance the will power of the patient to survive. Mantra is the 'Action Medicine' usually prescribed by a traditional Saora medicine man who fortifies the Mantra with weird dance, shriek and gyration of the limbs to the tune of the traditional musical instruments. Ausadha is either uni or multi ingredient material medicine administered internally or externally to mitigate diseases. Usually secular medicine man (*Gamanga* -the village head man or *Buye*- the village priest) prepares the simple medicines while the traditional medicineman (*Kudan* or *Kudan boi*) collects, prepares and administers simple or complex medicines following some rituals (***Annexure-II***). Being water based the Saora medicines do not have longer 'life span'. For this reasons several batches of the same medicine is prepared frequently for its continuous use. Simple mechanical means like pounding, threshing, grinding, whipping, squeezing is used for preparation of medicine. As the Saora utterly lacks the sense of pre-cleaning of ingredients and the apparatus/ tools, the prepared medicines get contaminated.

The methods of administration of medicine to the patient are equally as important as the medicine itself. Some of the medicines are used as the surface applicants against superficial diseases like sprain, itch, allergy, minor wounds etc. and some are taken internally through digestive and respiratory tracks as well as through other body openings like ear or nose. Saoras use vegetable oils (derived from the seeds of *Nimba, Karanja,* Mustard, Coconut, *Mahula* etc.) as well as animal fat externally to contain 'deep rooted' diseases like chest congestion, spleen inflammation etc.

**Medicineman:**

The traditional Saora medical provider is known as *Kudan* or *Kudanboi.* The former stands for a male shaman while the latter is his female counter part. They are respected and revered. The so-called secular medicineman is respected for their position in the society. Usually a Saora medicine man treats patients belonging to his community. As every Saora village has a *Kudan* or *kudanboi* a patient does not venture outside for treatment. The skepticism prevailing among the members of other communities, about the efficacy of the Saora folk medicine

and its providers, prevents the Saora medicineman to handle cases of the non-Saora patients. It is strange to find that the *Kudan* or the *Kudanboi* express their inability to handle patients suffering from 'diseases of white man' (modern diseases like AIDs, restlessness due to stress and strain, cancer, silicosis, obesity etc.). Some ailments like malnutrition, loss of appetite; diabetics etc. are never treated by Saora medicinemen successfully. Their medicines meant for treating snakebite is not always successful. They have amazing ability of curing the pediatric as well as female patients with gynaecological problems.

The traditional Saora medicinemen attach a string of food restrictions to their patients. Some of these food restrictions agree with the modern therapy while some others are not to the tune of the diseases that asked for special nutritional supplements consisting of animal as well as vegetable proteins. In case of a TB patient the animal protein is withdrawn. Pregnant women are advised to take little food with almost no protein contain. Similarly they are forbidden to take food rich in calcium. A person with the fractured bone is advised not to take animal protein but encouraged to go for vegetable proteins like legumes, lentils and pulses. According to the traditional Saora medicineman the 'live food' like meat, fish, egg and milk has capability of producing blood in the body. The production of more blood results draining out of the same through vomit. It is the reason behind withdrawing animal protein from the menu of a TB patient. Infact the Saora materiamedica do not have any effective antidote against cure of TB. Similarly consumption of food rich in protein and calcium results in the formation of bigger baby in the womb, which in turn gives unbearable pain at the time of delivering the child. This advice of theirs' badly affect the health of the pregnant mother and the baby in her womb.

**Resistance and change:**

The life style of the *Kudan* or *Kudanboi* is not appreciated by the present day Saora. The medicines prepared by them are not hygienic. Their administration to the patient demands observation of certain taboos and manas. The medicines have shorter 'life span'. The medicants are not readily available. As a result the Saora- enlightened or illiterate, prefer to go for modern Medicare facilities. The preference for the latter usually requires money. A Saora utterly lacks it. The Saora of older generation prefers traditional healthcare facilities while their younger counter part go for modern health practices. While the two systems are at the logger's head any institutional favourism shown to one system would produce results anathema to the general health condition of the tribe (Saora). It is high time for the Government to promote the traditional medicine of the Saora with institutional backing in a modern way. Their psychological medicines may be moulded into physiological medicine.

For management of ethnic medicines and health practices steps should be taken for the betterment of the ethnic providers. The ethnic health providers be enlightened and empowered with knowledge on physiology and hygiene. They may be trained in preventive as well as dietetic medicine. There should be a proper planning so that 'the society (human society) can adjust itself to the

changing socio-technical environment and can use this environment to make maximize the welfare of its members' (Mishra, Sudarsan and Rao-1974:2)

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*Annexure-1*

## Ingredients used in/ as Saora folk medicine

| Local (Saora) | Regional (Oriya) | English / Scientific |
|---|---|---|
| **Plant origin** | | |
| Aadi | Gaba | Jatropha curcas |
| Amba | Amba | Mangifera indica |
| Amensang | Haladi | Corcuma longa |
| Aangtadu | - | - |
| Beri | Dhau | Artocarpus lakoocha |
| Dadaire | Bhanga | Cannabis satiava |
| Danghumcharji | Champa | Micholia champaka |
| Dongjel | Mahi | Odina nodier |
| Dudumjing | Bisalya karani | Tridax pocumbins |
| Dhanua maricha | Dhanua lanka | Caspicum minimum |
| Dukta | Dhuanpatra | Nicotina labacum |
| Gulbanga | Mahakala | Trichasanthes palmeta |
| Grururi | Patalgaruda | R. Serpantina |
| Gdahangsar | Gangasiuli | Nyctanthes arborescen |
| Iswarjata /Sujang | Satabari | Asperagus racemosa |
| Kimbhekgilngada | Chitaparu | Plumbago beylanicia |
| Kintada | Jada | Racenus commnis |
| Kinta | Kadali | Musa para disiaca |
| Kamburi | Panisahaj | - |
| Kadabtidar | Sisal | Sisal |
| Khara | - | - |
| Kutamba | Banapiaj | Wild onion |
| Kare | Pitakeruan | Holarrhena antidysenterica |
| Krarjame / Karaanja | Karanja | Pongamia glabra |
| Kimbhekgilngada | Lajkuli | Mimosa pudica |
| Langre | Patrasiju | Opuntia dillenii |
| Labtar | Banamali | Jasminum angustifolium |
| Limba | Nima | Azadirachta indica |
| Lamda | - | - |
| Madure | Ghikuanri | Aloe vera |
| Mahula | Mahula | Madhuca latifolia |
| Oralbalgin | Mutha | Cyperus retundus |
| Paraka | Arakha | Calotropis gigentia |
| Resang | Bhuinnimba | Andrographis paniculata |
| Prebangama | Swetalata | - |
| Sursarji | - | - |
| Samakji | Banatulasi | Ocimum americanum |
| Sargi | Sala | Shorea robusta |
| Surgaijim | Sahada | Stribulus aspar |
| Tusharnag | Bahada | Terminalia bellerica |
| Tamla | Guharia | Acacia leucophloea |
| Tarabajit | Mandara | Hibiscus rosa- sonesis |
| Utaal | - | - |
| Valia | Banavalia | Semecarpus anacardium |

| **Animal Origin** | | |
|---|---|---|
| Gadhia naka | Gadhia naka | Nose of wolf |
| Bira hada | Bira hada | Collar bone of tiger |
| Bagha Dudha | Bagha khira | Milk of a tigress |
| Sambiri Kumbulan | Chhota pahadi musa | Small field rat |
| Bhalu Basa | Bhalu charbi | Fat of bear |
| Kai | Kai | Tree dwelling-nest building ant |
| Chheli Dudha | Chheli Khira | Milk of she-goat |
| **Abiotic origin and others** | | |
| Pani | Pani | Water |
| Pathar | Godi | Pebble |
| Tamba paisa ./ mudi | Tamba paisa / mudi | Copper coin / ring |

## *Annexure-II*

## Traditional medicines used against diseases / ailments

| Sl. No. | Ingredients | Method of preparation of Medicine | Administration | Remarks |
|---|---|---|---|---|
| **(Uni and Plant based)** | | | | |
| 1 | Are | The gum is collected by insertion. | Surface application of the gum on affected part twice a day to treat sore | The sore is cleaned with salt water before application of gum. |
| 2 | Beri | - | The twig is used as tooth brush twice a day to contain toothache | Cold water & sour fruit avoided |
| 3 | Bisalyakarani | A few leave are pressed in between the palms | Surface application of the pressed mass on bruise | Bruise is kept away from dust & water. |
| 4 | Danghumcharji | A few seeds are grinded to a fine paste with little water. | Surface application of the paste on penis at night time to check early orgasm. | Hot food & animal protein is avoided. |
| 5 | Dongjel | The bark is pounded with water and boiled. | The warm pounded mass is placed on deep wound . | Sour food, fermented beverage & dry fish are avoided |
| 6 | Dukta | A piece of dukta (dry) is chewed and the saliva is collected. | Surface application of the Saliva on hornet / wasp /bee sting. | - |
| 7 | Gaba | - | Surface application of the warm oil on abdomen to relieve from delivery pain. | Kudan boi / Bejuni attends the patient |
| 8 | Grururi | A small piece of root is grinded to a paste. | Surface application of the paste on snake bite once only. | Kudan / Kudanboi attends the patients |
| 9 | Iswarajata | The root is grinded to a fine paste and whipped with water. | Oral administration to contained non-secretion of milk of a nursing mother. | The Kudanboi / Baguni attends the patient |
| 10 | Jada | - | The warm oil is massaged over the abdomen twice a day to contained stomachache. | Chili, dry fish & constipating foods avoided. |
| 11 | Kadali | 21 small pieces of pith are soaked in a glass of water for one hour. | The water is taken orally once only to mitigate delivery pain. | Bejuni handles the patient. |
| 12 | Kakatbdang | With a little water the root is rubbed against the rough stone to get a paste like mass. | The paste is applied on the corner of nail to cure nail infection. | The affected nail is cleaned with warm water first |
| 13 | Kaaranjaa | - | The warm oil is massaged over the abdomen to cure spleen inflammation. | Non-Veg food is avoided. |
| 14 | -do- | - | The corn is cleaned with a knife and warm oil is put on it | Dry fish and dry meat is avoided. |
| 15 | Kurumkunjdin | The root is washed well and pounded to | Fresh juice is applied on the eyes four to five times | Chilly, smoke & sun ray is avoided. |

| | | | | |
|---|---|---|---|---|
| | | extract juice. | a day to cure eye infection. | An expert medicine man attends the patient. |
| 16 | Kutamba | The bulb (onion like object) is roasted. | The roasted bulb is pressed hard on the corn. | -do- |
| 17 | Lamda | Two pieces of root and one piece of bark is wet grinded to a paste. | A spoonful of paste is taken orally twice a day to check swelling of scrotum. One piece of root is tied around neck also. | Animal protein, pumpkin, potato, gourd & brinjal is avoided. |
| 18 | Mahula | The oil is warmed. | The warm oil is applied twice on infection at the corner of mouth. | Green vegetables, papaya & milk yielding roots are taken in great quantities. |
| | Oralbalgin | A piece of root is grinded to a paste. | A little of the paste is taken orally and rest of the paste is applied on the body to cure malaria. | Cold wind, soaked rice, rice beer and non-veg. food items are avoided. |
| 19 | Paraka | The latex is collected. | The ringworm is scratched with a piece of stone or *neem* wood. The latex is applied over it. | Dry fish/ meat is avoided. |
| 20 | Pulta | A few leaves are pounded well. | The pounded mass is placed on the forehead twice day to contain headache. | - |
| 21 | Sargi | The dry resin is powdered and put on live charcoal. | The smoke is inhaled through mouth twice a day to cure sore. throat . | Cold water, pulpy fruits & cool breeze is avoided. |
| 22 | Surgaigin | The bud is plucked to get resinous fluid. | The fluid is applied on eye lid twice a day to cure eye infection. | Smoke, hard sun ray and chilly are avoided. An expert medicineman attends the patient |
| 23 | Utaal | A narrow funnel is made out of the leaf. | The nozzle of the funnel is put into the nose and pressed gently to check nose bleeding. | It is 'Pressure Therapy' and is used by an expert medicine man. |
| 24 | Valia | A few nuts are warmed. | The warmed nuts are rubbed against the skin with little mohua oil to check heel cracking and skin flaking. | Fatty / oily food items are prescribed to the patient. |
| **(Multi & plant based)** | | | | |
| 25 | Gulbang, Resang & Gururi | The roots of the three plants are grinded to a paste with little water. | The paste is taken orally twice a day for a month to mitigate asthma. | Ripe pulpy fruits, smoke, fog, dust & chill wind are avoided. |
| 26 | -do- | -do- | A spoonful of the mix is taken once a day for two weeks to cure rheumatism | -do- |
| 27 | -do- | -do- | A spoonful of the mix is taken thrice daily in empty stomach for two weeks to cure stomachache. | Chilly, dry fish & constipating food items are avoided |
| 28 | Oralbajin, Khabe, | Equal volumes of the roots are grinded with | A spoonful of the liquid is orally administered along | A traditional medicine man |

| | | | | |
|---|---|---|---|---|
| | Madure & Amengsang | little water to a paste and filtered to get the extract. . Warmed. | with the surface application of the rest of the fluid on the affected limb to cure paralysis. | attends the patient. |
| 29 | Grururi, Limba, Danghumcharj i & Tusharnaj | The roots of the first three & fruit of the last (the medicine man decides their proportion) are grinded to get a sticky mass. The mass is made into several small balls and dried. | Two balls are stirred with a cup of Mohua liquor and taken thrice daily for cure from tuberculosis. | Non-veg. food items, potato, bamboo soots, pumkin & soaked rice are avoided. |
| 30 | Bhang & Sujang | A little of the former is grinded with a finger long root of the latter. | The paste is taken once a week at night to check early orgasm. | Hot & non-veg. food items are avoided. |
| 31 | Kimbhekgilng ada, Tarbajit & Sursurji | The roots of the three (proportions of the ingredients is decided by the traditional medicine man) are grinded and mixed with a cup of milk or mohua liquior. Whipped well. | A cup of the mixed is taken once only for termination of unwanted pregnancy. | A female traditional provider treats the patient. |
| 32 | Dongjel, Kamburi & Laangre | The bark of the former two along with the root of the third one are pounded & boiled in water. The water is decanted. | The warm pounded mass is placed over the deep wound & tied loosely with a piece of clean cloths. | Soaked rice & dry fish/ meat is avoided |
| 33 | Krarjame, Khare & Amengsang | A finger long amengsang and a piece of khare bark is grinded with oil of krarjame. | The oily paste is applied on scabies once a day after bath for at least seven days. | The patient is advised to take sufficient green leaves & ragi. |
| 34 | Susubadangjin , Salap, Kadabtidar, Tamla, Sulsuldijap, Angtadu & Pitakonda | A small twig of the former, a piece of the latter along with the roots of other plants is pounded to a paste like mass. | After setting the fractured bone the paste is applied on the limb. Bamboo splits are placed over it & tied firmly with a piece of cloth. | Fish, meat & liquor is avoided. Ragi, root crops & pulses are taken in sufficient quantities. |
| 35 | Predangma & Dukta | A piece of dry Dukta is stuffed inside a very narrow funnel made out of the dry leaf of the former. Ignited. | It is used as a chiroot and a mouth full of smoke is blown into the eyes of the patient twice daily to cure night blindness. | Traditional medicineman attends the patient. |
| 36 | Kare & Sugel | Equal quantities of roots of both are grinded with a little water. | The paste is taken orally twice a day in empty stomach for one day only for deworming the stomach. | Pulpy fruits, puffed rice and jiggery are avoided. |
| **(Uni and Animal based)** | | | | |
| 37 | Gadhia Naka | The dried Gadhia Naka is rubbed against dry rough surface. | The rubbed portion is inhaled deeply to get relief from pain due to embedment of fish bone | - |

| | | | | |
|---|---|---|---|---|
| | | | into the inner wall of the throat. | |
| 38 | Bira Hada | - | The bira hada is worn around neck to get rid of fear from seen and unseen forces. | The treatment is based on 'Touch Therapy'. |
| 39 | Bagha Dudha | A few dry flakes of milk of a tigress is dissolved in water. | The dissolved milk is taken orally during nighttime to checkmate the no secretion of milk of a nursing mother. | A traditional female provider treats the patient. |
| 40 | Sambiri Kumbulan | The sambiri kumbulan is killed and dried under the sun. | The dried object is tied around neck for protection against spirit intrusion. | It is a preventive medicine based on 'Touch Therapy'. |
| 41 | Bhalu Basa | The bhalu basa is warmed. | The warmed basa is massaged around the joint to get relief from joint pain, sprain and rheumatism. | Fomenting of the affected joint is avoided. |
| 42 | Kai | A few kai is pressed between the palms. | The sticky mass thus obtained is inhaled deeply thrice a day to get relief from nose stiffening. | Exposure to cold wind and water is avoided. |
| **(Multi – both Plant and Animal)** | | | | |
| 43 | Samakjing & Chhelimuta | A fistful of the samakjing leaf is grinded to a paste and whipped with a cup of Chhelimuta. Filtered. | Two drops of the fluid are put into the affected ear to get rid of ear pain. | Consumption of custard apple is avoided. |
| **Other ingredients** | | | | |
| 44 | Tamba paisa or Tamba mudi | An old brass / copper ring or coin is tied to a thread along with a small pouch containing seven grains of unboiled rice (*arua* rice). | The thread is worn around the neck to contain mouth infection. | The treatment is based on 'Touch Therapy' |

# STREET CHILDREN-THEIR OCCUPATIONAL HAZARDS AND THE NEED FOR SOCIAL INTERVENTION

*N.K. Behura*
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## Introduction

World population is growing rapidly. In developing countries like India, the situation has become alarming. It has created various social problems in manifold ways and hence it has become deleterious to the prosperity of the nation.

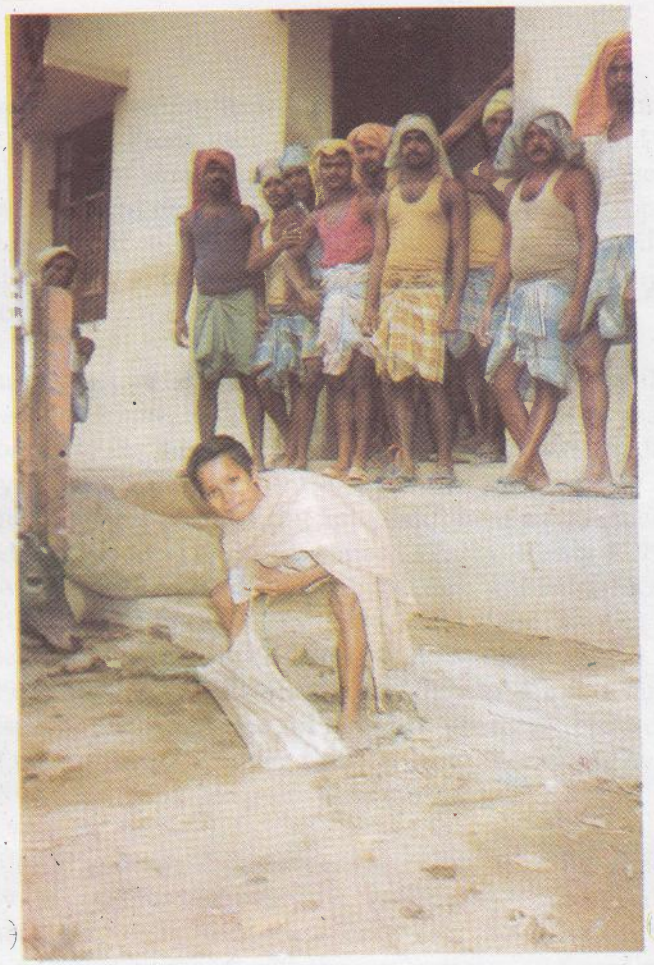
About 35 per cent (2001) of Indian population are illiterate and most of them are intrinsically attached to their age-old tradition. Their insight on the negative effects of unplanned family is very low. This, of course leads to overexploitation of the existing natural life-supporting resources and in that case the demand for searching of alternative ways and means for livelihood always remains on the front line. For the poor and hapless people, when it becomes very difficult to sustain life; they migrate to their accessive urban centers and lead a very wretched and pitiful life in slums. They struggle hard for their existence in the new ecological setting, i.e., slum and finally take to socially low and derogatory occupations, like rickshaw-pulling, wage-earning, construction work; domestic sundry work etc., either willingly or unwillingly by the compulsion of circumstances. By the way they become very individualistic and self-centric in nature and ask their minor children to work for themselves and often for the family members too. But since the children are not valued much for wage-earning, they come onto the streets to pick rags, beg alms, sweep railway platforms and train coaches, vend stuffs, shine shoes or to do similar jobs. Normally these works are very hazardous and involve high risks since they work for prolonged hours and not conscious of their rights even through they are very defensive in nature. Thus, these children comprise a major social problem in our country from various view points and, therefore, the need of social intervention is very much essential for their well-being.

## Materials and Methods

With a view to understanding the field reality the authors of this paper, conducted a study on the "Street Children in Bhubaneswar City" in the year 1998 on behalf of NCDS. The paper is based on the finding of that work.

For the purpose of that study, a total number of 120 street children, below the age of 14 years were selected from 8 different pockets of Bhubaneswar city on the basis of simple random sampling procedure.

At the first stage, the pockets namely, (i) Rajmahal/Market building/Kalpana, (ii) Railway station/Cuttack Road (iii) FCI Malgodown/Sriya Talkies, (iv) Jayadev Vihar/Salia Sahi, (vii) Baramunda/CRPF area and (viii)



A street child collecting fallen potato from a godown site at Iiginia, Bhubaneswar

A street child approaching to wating passengers to shine their shoes.

Ainginia/Dumudum, were selected purposively where the street children are mostly concentrated. From each pocket, a total number of 15 samples were selected on the basis of simple random sampling giving weightage to cover at least 25 per cent of street girl children irrespective of taking equal proportion of sample of these children from each pocket. This restriction was imposed in the sampling procedure with a view to save time and complete the research project in time since locating street girl children was more time consuming.

A number of studies have been made on the street children by various researchers, academicians, NGO activists, etc. But in Orissa no major work has yet been taken on these children. However, the study that was conducted by Behura and Mohanty (1998) is an important one and the present paper is based on that work. Specific problems of street children of different metro cities, have, however been focused by Pandey (1991), Arimpoor (1992), Reddy (1992) and Phillips (1994). The works of these scholars are concerned to Madras, Kanpur, Delhi and Bangalore cities respectively. They have highlighted various socio-economic aspects of the children. The work of Behura and Mohanty (1998) is specific to the State capital of Orissa i.e. Bhubaneswar, and they have also focused many socio-economic aspects including the occupation of these children, income and utilization of their earnings, working hours, personal health and hygienic problems, problems of survival, future perspectives of the children, etc.

In order to understand and focus the problems of the street children; both quantitatively as well as qualitatively, various anthropological methods were adopted. These are: collection of primary data through structured schedules, observations, personal interview with the respondents and recording of case studies etc.

**Finding and Discussion**

Generally the parents of the street children are very poor. Educationally they are also very backward. There are 86.67 per cent of fathers as against as many as 96.67 per cent of mothers who are illiterate. Partly because of this and partly because of some other reasons, the street children remain deprived of their right to education. As a result, most (78%) of them are found to be illiterate (***Table: 1***). This, together with utter poverty, compel them to work and earn for themselves instead of attending school.

Generally, the street children take to such occupations that do not require any formal education. They do not bother about the sanctity of the job they adopt and mindless for their social prestige in the public. Hunger, the most serious propelling instinct, that may compel a child to beg for alms or even snatch a piece of bread from the mouth of an animal but he/she does not normally adopt such occupations that are not approved by his/her parents or guardians. But if he/she is independent and has less or no contact with his/her parents, he/she enjoys absolute freedom to earn out of any type of work according to his/her own choice and interest that may be rag-picking, shoe-shining, collection of rotten fruits and vegetables, sorting of vegetables, cleaning of utensils at hotels or cleaning clothes or doing similar jobs as a domestic servant etc. Thus, a child of the street can take

to any kind of sundry job depending upon his/her personal interest and the demand of the situation.

It is found that the street children of Bhubaneswar city are engaged in as many as 10 different occupations.

These are as follows:

(i) Collection of semi-burnt coal and green coconut fibres,
(ii) Domestic Service
(iii) Garage work and working in cycle-repairing shops,
(iv) Menial work in hotels,
(v) Collection of strewn potatoes at godown sites,
(vi) Potato sorting,
(vii) Rag-picking,
(viii) Cleaning of railway platforms and train compartments and collection of tips and alms;
(ix) Shoe-shining, and
(x) Vending of edible items at various market complexes, railway stations and public places.

But surprisingly most of the street children (55.83%) are engaged in rag picking. They are followed by about 12 per cent of children who are engaged in collection of strewn potatoes form different potato godown sites at Ainginia. Next to them, 8.33 per cent are found to work as domestic servants. An equal percentage of these children are found to be self-employed with the business of shoes-shining at railway platforms, bus stations, foot-paths etc. A total number of 7 of them, accounting for 5.83 per cent, work in different automobile garages, work-shops and cycle-repairing shops followed by 3.33 per cent engaged in vending of various edible items like egg, ground-nut, betel and cigarette, tea etc at railway platforms and in train compartments. Only 2 (1.67%) of them collect thrown out semi-burnt coal from tea shops and hotels and green coconut coir from road sides for selling or for personal use as fuel. Another group consisting of an equal percentage of street children work as roadside hotel assistants. Further, same number of street children work to sort out potatoes of different sizes and rotten potatoes at potato godowns and potato retail shops. The rest 2 (2.22) children are found to clean railway platforms and train compartments and beg for tips, alms etc (***Table:2***).

When sex-wise distribution of occupation is considered, it is observed that in case of either sexes, adoption of rag-picking is found to be highest that comes to 57.78 per cent for the boys as against 50 per cent for the girls. But so far as the next important occupation is concerned, it is potato collection (13.33%) for boys, and domestic service (30.00%) for the girls.

The reasons that have compelled the street children to adopt these occupations, are found to be as many as 10 different types ( ***Table: 3***). In most of the cases (77.5%) the street children say that they have adopted their present occupations as per the opinion, suggestion or instruction of their parents followed by a total number of 35 children, about 29 per cent, who say that they have taken to different jobs, because more of their peers are engaged in such activities. Interestingly, 20

per cent of them opine that their present jobs are more profitable than other jobs. As a result of this, they have retained such occupations. About 12 per cent state that they happened to take up the present jobs as their brothers and sisters are already engaged in such activities. Among the rest 5 reasons, each one comprises below 10 per cent of the total sample, which in the descending order are; poverty or forced circumstances (9.17%), less hazardous and involvement of less risk (9.17%), tradition (6.67%), opinion or suggestion of relatives (2.50%) and death of parents; father or mother or both (2.50%).

In order to stay alive, each moment becomes challenging for the street children. The motive of 'struggle for survival' alarms at the dawn of the morning and compels them to leave the bed as soon as they can They are habituated to wake up early in the morning, and rush to the streets of the city to earn their daily bread. Throughout the day, they are to remain on streets and work hard, otherwise they remain starved.

A perusal of ***Table - 4*** reveals that maximum street children (34.17%) remain on streets for about 9-10 hours per day followed by 24.17 per cent remaining for 7-8 hours and 11.67 per cent for 5-6 hours. An equal percentage of them are compelled to work on the streets for about 11-12 hours per day. The situation of 12 (10.00%) street children, 10 per cent of the total sample, is found to be horrible who work for 13 or more hours per day on the street. But fortunately 8.33 per cent of them are found to be in a little better position who work only for about 2-4 hours a day. When one looks at certain occupations, with regard to utilization of average time, it is observed that the street children, who work in different hotels, toil for longer duration per day which comes to be about 14 hours on an average, and it is least, i.e., 3.5 hours per day in case of those who are engaged in collection of semi-burnt coal and green coconut fibres. Amongst the rest, the street children who clean railway platforms and train compartments and collect tips or alms., work for about 13 hours a day, followed by garage boys and assistants in cycle repairing shops (12.86 hours), vendors (10.5 hours), rag-pickers (9.57 hours), shoes-shiners (9.05 hours), potato collectors (7.93 hours), potato graders (6.5 hours) and domestic servants (4.55 hours). The average working hours per street children irrespective of occupations comes to be 9.12 hours per day (***Table: 5***).

The street children can, in one way, be treated as the by-product of population explosion, that stand against maintenance of good quality of life (Q.O.L).

Deterioration of quality of life (Q.O.L) starts soon after the poor and helpless immigrants are maladjusted in urban centers and their subjunctive hopes become futile. In this context it seems that both the parents as well as children struggle very hard for their survival and try to enhance their quality of life (Q.O.L). But high rate of illiteracy among the parents of these children has necessitated them to adopt low income generating occupations in order to sustain their life in a highly competitive environment and to financially support their families. The families of these people normally constitute a large number of members per family. This leads to disorganization of familial ties between parents

and children. In many cases (75.00%) parents become addicted to alcoholic drinks in order to get rid of hyper-tension, bodily pain and psycho- social and economic pressure of supporting their large family with their meager daily income. Apart from this, parents (19.01%) also suffer from various diseases, the most important ones being viral fever (33.33%) colic or abdominal pain (23.8%) etc compel them to ask their children to work for themselves as well as for their parents and other family members. Relating to this, as many as 87 (82.08%) children belonging to the first category of children, i.e., 'children on street' say that they are asked by their parents to work and earn daily (***Table: 6***). Not only they are simply asked to work and earn daily rather in case of 27.59 per cent of children a large amount is fixed up by their parents for earning daily (***Table: 7***) In most of the cases (37.50%) Rs. 10/- per day is demanded by the parents of the street children and they are followed by 29.17 per cent of them for whom it is as high as Rs.30/- (***Table: 8***). When the street children do not work as per the instructions of their parents and earn accordingly, they are scolded and are also beaten up (89.53%), at times they are not given adequate food (30.23%), and even in many cases (20.93%) food is completely denied. For about 7 per cent of children, their parents close the doors and in such cases the children become disappointed and hopeless (***Table: 9***). Because of these embarrassing situation about 18 per cent of the total children (***Table: 10***) did not come to their respective homes at least for once during the last week out of fear of being scolded or beaten up when they had not worked so as to meet the demands of their parents. In this regard ***Table No.11*** illustrates that of the total 19 children, about 74 per cent had not come to their respective homes for about 1-2 days during the last week and they had spent their nights mostly at the railway platforms (73.68%), market complex premises (15.79%), community halls or meeting-pendals of their bastees (5.26%) etc. (***Table: 12***).

Street children work hard and in most of the cases (about 90.1%), they give away a large share of their daily earnings to their parents and remain underfed. When a question on the ways of spending of their earning by their parents was asked, 97.17 per cent of them opined that their parents spend it for the general purpose of family. But 34.91 per cent of them say that most often their fathers take it for consumption of alcohol followed by 29.25 per cent who said that at times their fathers do so, but for most of the times their money is spent for the day to day management of the family (***Table: 13***).

Food or nutritional intake is one of the three basic needs of life. But it is the most important requirement for sustenance of life and hence it has direct linkage with physical and mental growth and also development of working ability. If a child takes required amount of food according to its age and bodily growth, it grows properly and works accordingly. But the poor economic condition of parents of a number of street children does not permit them to feed their children properly. On the other hand their poor economic condition demands hard labor daily from each of their children. At times some of the children remain unfed and often they remain underfed. Subsequently they become malnutriated.

A perusal of ***Table No. 14*** throws some light on the dietary pattern of the street children on the day before the interview was conducted with them. It is

found that 13.33 per cent of children had not taken any breakfast before they went to the streets for earning their day's bread. Surprisingly 1.67 per cent of them had no other way than to spend the whole day without a lunch. Further 4.7 per cent of them could not have dinner before they went to sleep. In between the time of lunch and dinner, only about 56 per cent had taken tiffin and the rest remained hungry. When about 49 per cent had adequate breakfast, the rest were underfed. Still about 72 per cent were satisfied with lunch as against 75 per cent who had dinner to their hearts content. Tiffins were adequately available for only 69 per cent of these children (***Table: 15***). Thus, since quite a sizable number of these children remained underfed, they are starved. But still then they were not relieved from working daily on the streets.

Since most of the street children live in unhygienic environments, remain underfed and work hard in empty stomach, they suffer miserably form various diseases. It is found from the ***Table No.16*** that one-fourth of the street children are presently suffering from diseases, like scabies (30.00%) joint pain (20.00%), mild fever (10,00%), itching on feet and hand (6.67%), headache (3.33%), dog-bite (3.33%), polio (3.33%), and tuberculosis (3.33%) etc.

These findings otherwise signify that working in unhygienic conditions and neglecting personal hygienic care cause scabies to a large number of street children, cold and cough affects a sizeable number of children as they remain exposed to sun, rain and cold for a major part of time. Joint-pain is quite obvious to them as each child is to cover a long distance by walk on every working day. Suffering from itching is a problem mainly with the girl street children who usually work as maid-servants and are supposed to do such work as cleaning utensils, house floors, clothes etc. Even though, these children suffer from these diseases, they (73.33%) do not take any remedial measure unless they become very serious. A total number of 4 (13.33%) diseased children are however found to have consulted doctors and the local health workers as against 6.67 per cent who have just consulted the salesmen of medicine shops and purchased medicines as per their prescriptions. They have done so to avoid consultation fee with a doctor and also to save time. There are an equal percentage of these children whose parents are taking care to cure them through the local traditional healers (***Table: 17***).

Attitudinal aspects of the general public, municipal officials, railway and police officers towards the street children have been highlighted in ***Table: 18***. It points out that during the last year while 13.33 per cent of these children have been harassed by the general public, it is 7.5 per cent children who were put to trouble by the railway staff and police officials. A total number of 4 (3.33%) children say that they have been put in difficult situations by the municipal officials also.

Generally these children (rag-pickers and domestic servants etc) are often scolded and even beaten up by some public whenever there is a theft case. In many cases they are also handed over to the police even if they are not involved in such cases. The shoe-shiners who open their petty shops at roadsides or railway stations, are most often beaten up or their petty shops are thrown out by the railway police mainly during the peak business hours or during arrival of ministers and other such

VIPs. Sometimes municipal officers also create much problem for them by the way of seizing their shops or belongings.

**Conclusion and Suggestive Measures**

The root cause of any social problem lies on sustained persistence of an imbalance between population and available resources for utilization. In a populous country like India, human population is growing very fast because of illiteracy, low level of awareness among the rural people and flexible implementation of family planning legislations. It exerts much pressure on the local resources, and when the resources become scarce, people face various problems and migrate to resource-rich areas in order to extract their livelihood. Developing urban centers are such resource-rich areas, that attract a number of rural wage-earning people. But when the urban centers receive more of such people than required, the available resources are overexploited and in such situations most of the children of these people come on to the streets to work and earn their own livelihood. As a result, in order to have complete eradication of appearance of these children on streets of urban centers, on priority basis, our national family planning measures should be implemented with utmost sincerity instead of being suggestive to have only one or two children per couple. This would, in the other way, minimize over migration of rural people to different developing urban centers and hence proper balance between population and resources for utilization could be maintained. The other related suggestive measures for immediate adoption and implementation for eradicating of street children would be as follows:

(a) That the municipal corporate bodies must develop their own strategic measures to restrict over immigration of rural wage-earners whose children most often come on to the streets for work. These corporate bodies must be very cautious to register each immigrant and not to accommodate more immigrants than required. It should endeavor to rehabilitate them properly.

(b) Those who are accommodated within the municipal area and are provided with 'Urban Basic Service' (UBS) facilities, must be imparted awareness to strictly follow the family planning measures of the government. In no case a family residing within the municipal area be permitted to procreate more children than approved. Those who fail to follow it should be withdrawn form availing accommodation and land holding facility within the municipal boundary. If, for the time being, these suggestive recommendations are not possible for implementation, than the following measures be adopted for the development and welfare of the street children.

(c) That a scientific survey be made on priority basis to identify street-child-households. In each slum, these children must be covered under universalisation of formal education and it should be ensured that they are not asked or forced by their parents to work as earners of bread either on streets or on any other pale. If it happens so, then their parents must be restricted form availing ration-card facility or be withdrawn from poverty alleviation programmes if they are covered under any of such programmes.

(d) Each and every child of the slum must be provided with free education apart from free boarding facility, at least upto matriculation and there should be job guarantee for the matriculates. For the non-matriculates, need-based vocational training be provided according to their own choices and demand of the market. Provision should also be made for rehabilitation of successful trainees so that more and more street children as well as their parents would be interested and come forward to avail of the opportunities. By this way, twofold objectives of the nation, viz., improvement of literacy and reduction of unemployment among the Indian population would be considerably reduced.

(e) The poorest of the poor or 'At-Risk' slum dwellers and those who lie on footpaths, backyard of urban residents, under open sky, railway platforms, market complex premises, office premises etc should be identified on priority basis and be covered under special poverty alleviation programmes in order to improve their economic condition. These children should be given more attention and be covered under the above job-guaranteed educational and vocational training programmes.

(f) Medical service should be provided at the doorstep of each and every slum dweller periodically, i.e., at least once in a week through public mobile-health-checkup-camps/vans. Emphasis must be give on health check up of each child and nursing mothers without fail.

(g) Since the nature and working pattern of the street children vary from one place to another, government must work out some specific legislations for the welfare of each category of these children. For example, the working conditions and patterns of a domestic servant are not same as with a hotel boy or a garage worker. Hence, there must be specific legislations indicating their nature of work, hour of work, etc. Accordingly minimum wage rates also be fixed up and specified in order to protect them from exploitation.

(h) The rag-pickers work hard throughout the day but they are exploited at various levels; one level being at the local godown keepers where they sell their collections. Since there is no uniformity in the rate charts for different scraps, the innocent rag-pickers fall prey to various godown keepers. So, government must take proper initiative to fix-up uniform rates for different scraps and the godown keepers must be instructed to display the rate charts for the public.

(i) Relating to the above suggestions, there should be a special consumer court to which the children can have easy access and approach to file complaints.

(j) As an alternative to the above suggestion (i) it would be better if municipal corporate bodes fix up some collection localities/centers and collect rags from rag-pickers at such localities/centers through mobile collection vans. If it is done so, on one hand these corporate bodies would raise their own revenue and on the other hand the rag-pickers would get proper value of

their collections and hence also get freed from being exploited by the local godown keepers.

(k) As the street children are deprived of availing public parks, playgrounds etc for relaxation, slum-based recreational/playgrounds be developed and game items be provided by the municipal corporate bodies or NGO sectors.

(l) Government should take immediate steps to identify the orphans who work on streets, railway stations etc. on priority basis and must try to accommodate them in orphanage homes financed by union or state government or NGO s founded by foreign agencies.

(m) Like the orphans, girl-street children should also be identified on priority basis and specific need-based self employment programmes be formulated for them. Specifically, they should be imparted training on some vocational trades like sewing, appliqué work, terractotta work and other handicrafts out of which they can independently earn their livelihood. However, there must be a cooperative institution at the government level to procure the product form these children at a suitable cost fixed by the government. This would, in other way help them to get suitable life partners for marriage.

(n) It is universally accepted that if we educate a man, we educate a person but if we educate a women, we educate a family. So, apart from providing vocational training, girl children should also be provided with formal or non-formal education depending upon their age and interest.

(o) Finally, a special committee be formed at the government level to facilitate proper implementation of the welfare schemes and to protect the street children form exploitation.

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*Table - 1*

**Educational Status Among Street Children**

| Level of Education | Total Cases | % age |
|---|---|---|
| (1) | (2) | (3) |
| Illiterate | 93 | 77.50 |
| Primary (I-V) | 24 | 20.00 |
| Middle (VI-VII) | 2 | 1.67 |
| Upto High School but below Matriculation | 1 | 0.83 |
| **Total** | **120** | **100.00** |

*Table - 2*

**Distribution of street Children According to Sex and Occupation**

| Sl. No. | Occupation | Boys | Girls | Total |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| 1 | Collection of Semi-burnt, coal and Green coconut fibre | -- | 2 (6.67) | 2 (6.67) |
| 2 | Domestic Service | 1 (1.11) | 9 (30.00) | 10 (8.33) |
| 3 | Garage Work/Asst. at Cycle Repairing shop | 7 (7.78) | -- | 7 (5.83) |
| 4 | Hotel work | 2 (2.22) | -- | 2 (1.67) |
| 5 | Potato Collection | 12 (13.33) | 2 (6.67) | 14 (11.67) |
| 6 | Potato sorting | 1 (1.11) | 1 (1.33) | 2 (1.67) |
| 7 | Rag-picking | 52 (57.78) | 15 (50.00) | 67 (55.83) |
| 8 | Railway platform and Train Compartment cleaning and collection of tips and alms | 2 (2.22) | -- | 2 (1.67) |
| 9 | Shoe-shining | 10 (11.11) | -- | 10 (8.33) |
| 10 | Vending | 3 (3.33) | 1 (1.33) | 4 (3.33) |
| **Total** | | **90 (100.00)** | **30 (100.00)** | **120 (100.00)** |

*Table - 3*

**Factors Responsible for Taking to the Present Occupations (N=120)**

| Sl. No. | Factors | Total Cases | % Age |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| 1 | As per the opinion/suggestion/ instruction of parents | 93 | 77.5 |
| 2 | As per the opinion/suggestion of relatives | 3 | 2.50 |
| 3 | As more peers are engaged in this work | 35 | 29.17 |
| 4 | As brother (s)/sisters(s) are, engaged in this work | 14 | 11.67 |

| | | | |
|---|---|---|---|
| 5 | As it is more profitable | 24 | 20.00 |
| 6 | As it is less hazardous and involves less risk | 11 | 9.17 |
| 7 | Death of parents | 3 | 2.50 |
| 8 | Poverty/forced by circumstances | 11 | 9.17 |
| 9 | Traditional occupation | 11 | 6.67 |
| 10 | Decision by self to raise own money to spend independently. | 12 | 10.00 |

***Table - 4***

**Working Hour of the Street Children Per Day**

| **Duration of work (In Hours)** | **Total Cases** | **% age** |
|---|---|---|
| (1) | (2) | (3) |
| 2-4 | 10 | 8.33 |
| 5-6 | 14 | 11.67 |
| 7-8 | 29 | 24.17 |
| 9-10 | 41 | 34.17 |
| 11-12 | 14 | 11.67 |
| 13 and More | 12 | 10.00 |
| **Total** | **120** | **100.00** |

***Table - 5***

**Average Working Hour Per Day according to Occupations**

| Sl. No. | Occupation | Total Persons engaged | Total time spend in last working day (In Hours) | Average |
|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) |
| 1 | Collection of Semi-burnt. coal and Green coconut fibre | 2 | 7 | 3.5 |
| 2 | Domestic Service | 10 | 45.5 | 4.55 |
| 3 | Garage Work/Asst. at Cycle Repairing shop | 7 | 90 | 12.86 |
| 4 | Hotel Assistant | 2 | 28 | 14.00 |
| 5 | Potato Collection | 14 | 111 | 7.93 |
| 6 | Potato sorting | 2 | 13 | 6.5 |
| 7 | Rag-picking | 67 | 641.5 | 9.57 |
| 8 | Railway platform and Train Compartment cleaning | 2 | 26 | 13.00 |
| 9 | Shoe-shining | 10 | 90.5 | 9.05 |
| 10 | Vending | 4 | 42 | 10.5 |
| **Total** | | **120** | **1094.5** | **9.12** |

*Table - 6*

**Whether Parents ask you to do work and earn daily (Among children on street)**

| Responses | Total Cases | % age |
|---|---|---|
| (1) | (2) | (3) |
| Yes | 87 | 82.08 |
| No | 19 | 17.92 |
| Total | 100 | 100.00 |

*Table - 7*

**If yes, do they fix up any target amount to earn daily?**

| Responses | Total Cases | % age |
|---|---|---|
| (1) | (2) | (3) |
| Yes | 24 | 27.59 |
| No | 63 | 72.41 |
| Total | 87 | 100.00 |

*Table - 8*

**Target Amount Fixed up for the Last Day**

| Target Among Fixed | Total Cases | % age |
|---|---|---|
| (1) | (2) | (3) |
| 1-10 | 7 | 37.5 |
| 11-20 | 3 | 12.5 |
| 21-30 | 5 | 20.83 |
| 31+ | 7 | 29.17 |
| Total | 24 | 100.00 |

*Table - 9*

**What Happens when you do not work according to your parents (N=86)**

| Varieties | Total Cases | % age |
|---|---|---|
| (1) | (2) | (3) |
| At time adequate food is not given | 26 | 30.23 |
| At times food is denied | 18 | 20.93 |
| At times door is closed | 6 | 6.8 |
| Many times scolded and beaten up | 77 | 89.53 |

*Table - 10*

**Have you ever not returned home out of fear during the last week?**

| Responses | Total Cases | % age |
|---|---|---|
| (1) | (2) | (3) |
| Yes | 19 | 17.92 |
| No | 87 | 82.08 |
| Total | 106 | 100.00 |

*Table - 11*

**If yes, how many times last week?**

| No. of times (in days) | Total Cases | % age |
|---|---|---|
| (1) | (2) | (3) |
| 1 | 7 | 36.84 |
| 2 | 7 | 36.84 |
| 3 | 3 | 15.89 |
| 4+ | 2 | 10.53 |
| Total | 19 | 100.00 |

*Table - 12*

**In such cases, where did you stay?**

| **Places** | **Total Cases** | **% age** |
|---|---|---|
| **(1)** | **(2)** | **(3)** |
| Railway Platform | 14 | 73.68 |
| Community hall/meeting pendal or basti/ slum/village | 1 | 5.26 |
| Garage | 1 | 5.26 |
| Market complex premise | 3 | 15.79 |
| Total | 19 | 100.00 |

*Table - 13*

**How your income is spent by your parents (N=106)?**

| **Responses** | **Total Cases** | **% age** |
|---|---|---|
| **(1)** | **(2)** | **(3)** |
| Spent for the general purpose of the family | 103 | 97.17 |
| For majority of times father takes it for consumption of alcoholic drink | 31 | 29.25 |
| At times father takes it for consumption of alcohol | 37 | 34.91 |
| It is spent to village for education of bothers/sisters | 1 | 0.94 |
| It is saved for marriage purpose of self/sister | 2 | 1.89 |
| Adjusted towards food charges at relative's home | 1 | 0.94 |

*Table - 14*

**Status of Consumption of food in last day (N=120)**

| Variables | Whether consumed | | | |
|---|---|---|---|---|
| | Yes | %age | No | %age |
| (1) | (2) | (3) | (4) | (5) |
| Breakfast | 101 | 86.67 | 16 | 13.33 |
| Lunch | 118 | 98.33 | 2 | 1.67 |
| Tiffin | 67 | 55.83 | 53 | 44.17 |
| Dinner | 115 | 95.83 | 5 | 4.17 |

*Table - 15*

**Quantity of Consumption of food on last day (N=120)**

| Variables | No. of children consumed | Level of Consumption | | | |
|---|---|---|---|---|---|
| | | Adequate | %age | Inadequate | %age |
| (1) | (2) | (3) | (4) | (5) | (6) |
| Breakfast | 104 (100.00) | 51 | 49.04 | 53 | 50.96 |
| Lunch | 118 (100.00) | 85 | 72.03 | 33 | 27.97 |
| Tiffin | 67 (100.00) | 42 | 62.69 | 25 | 37.31 |
| Dinner | 115 (100.00) | 86 | 74.78 | 29 | 25.22 |

*Table - 16*

**Type of Diseases Among Diseased Street Children (N=30)**

| Sl. No. | Diseases | Total Cases | % age |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| 1 | Cold and Cough | 7 | 23.33 |
| 2 | Dog Bite | 1 | 3.33 |
| 3 | Headache | 1 | 3.33 |
| 4 | Itching | 2 | 6.67 |
| 5 | Joint pain | 6 | 20.00 |
| 6 | Mild fever | 3 | 10.00 |
| 7 | Polio | 1 | 3.33 |
| 8 | Scabies | 9 | 30.00 |
| 9 | Tuberculosis | 1 | 3.33 |
| 10 | Wound on feet and body | 8 | 26.67 |

*Table - 17*

**Type of Treatment going on among diseased street children (N=30)**

| Sl. No. | Type of Treatment | Total Cases | % age |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| 1 | Consultation with Doctor/Health worker | 4 | 13.33 |
| 2 | Consultation with sales men | 2 | 6.67 |
| 3 | Consultation with Traditional healer | 2 | 6.67 |
| 4 | No Treatment | 22 | 73.33 |
| Total | | 30 | 100.00 |

*Table -18*

**Harassment by Public, Police, Municipal Officials to the Street Children during last Year (N = 120)**

| Variables | Harassed | Not Harassed |
|---|---|---|
| (1) | (2) | (3) |
| Public | 16 (13.33) | 104 (86.67) |
| Municipal Officials | 4 (3.33) | 116 (96.67) |
| Railway/Public Police | 9 (7.5) | 111 (92.50) |

***Note : Figures in brackets represent % age in all tables***

# THE DIDAYI DEVELOPMENT PERCEPTION

*K.K.Mohanti*

**Introduction:**

The Didayi constitutes a numerically small ethno-cultural group inhabiting the western part of the Eastern Ghats between the Machhkund valley and the Kondakamberu mountain range, currently a part of the Malkangiri district of Orissa. Consequent upon the construction of Balimela Hydel Project, the Didayi are found in three distinctive habitats, such as (i) the foothills/ plains area, (ii) mountainous/ hill area and (iii) the cut-off area by the side of Chitrakonda reservoir. The Didayi of the first habitat enjoy the benefits of cultural contact with the outside world more than the inhabitants in the rest two areas. They have been identified as one of the 13 Primitive Tribal Groups (PTGs) as per the criteria stipulated by the Government of India and the micro project strategy of their all round development has been adopted since the financial year, 1986-87. Currently, the micro-project styled as the Didayi Development Agency (DDA) is functioning with its headquarters at Kudumulugumma, which also happens to be the block headquarters. The DDA comprises altogether 39 villages, out of which 6 villages are in the plains area, 18 in hills area and the rest 15 villages in the cut-off area. The Didayi of the hills and cut-off areas are more backward compared to those inhabiting the plains area because of relative isolation, inaccessibility, less exposure to modernization and less culture contact and one notices retention of their core-culture by these two groups.

The Didayi called themselves "*Gntare*" (Haimendorf, 1945, see Guha et al, 1970:1) earlier, but the younger generation identifies themselves as Didayi only. They are the speakers of a language which is classified under the Austro-Asiatic (Munda) family of language. Their population in 1961 Census was 1661 persons only and it increased to 1978 in 1961 Census. In 1971 their population further increased to 2164 and in 1981 it decreased to 1971. As per 1991 Census their population was estimated at 4460. In 2001-02 (survey by COATS, Koraput) their population subsequently increased to 5,727 and the sex-ratio was 1033 females per 1000 males. The percentage of literacy was 12.56 for males, 3.36 for females and 7.89 for all persons.

**Social Life:**

The Didayi is considered as an ethno-cultural/ tribal group found only in Orissa State and nowherelse in our sub-continent. As reported by earlier ethnographers and researchers, the tribal community was splitted into two exogamous halves (equal/ unequal), called moieties (cf. Guha et. al, 1970 and Chowdhury, 1990). Theoretically, moiety division speaks of the existence of a dual organisation in tribal communities. As each moiety is characterized by the principle of exogamy and based on descent, it institutionalizes reciprocity and forges solidarity for the perpetuation of social identity of the tribal group a whole. Each moiety believes to have descended from a common ancestor which is more a

mythological figure rather than a genealogically traceable individual. In other words, moiety channelises and regulates the process of selection of marriage partners. Another salient feature of the Didayi social organisation is the existence of the phratries identified and operated on the basis of totems. Each totemic group consists of a number of clans which are characteristically exogamous. Thus each phratry is a unilineal descent group consisting of two or more number of clans which are interrelated to each other. As reported by Guha et al (1970), there are five totemic groups (Gta), such as Nkoo (tiger), Mala (Cobra), Gibe (bear), Mosali (Crocodile) and Goi (tortoise). The Didayis do not cause harm to their respective totems. Further, each clan comprises a number of lineages (biria), which are corporate descent groups or consanguineal kin groups and are ancestor-oriented and may or may not be genealogically traceable. The lineage as a social group is pre-eminently exogamous and regulates marriage in the Didayi community. The minimal lineage,in which the founder or the ancestor who is usually genealogically traced, appears to be the most effective one and occupies pivotal position in their social structure. As the descent is counted in father's line, among the Didayi, these are patrilineages or patrilineal groups, based on unilineal principle of descent. The lineage not only regulates marriage like the clan group but also plays significant roles in various life-crises rituals, like child-birth, puberty rites, marriage and obsequies. Each lineage consists of a number of extended as well as nuclear families. The Didayi family is patriarchal/ patripotestal, patrilineal, patrilocal/ patrivicineal and patronymic. The male head of each family plays the authoritarian role in matters of decision-making, ownership and inheritance of property and the like. The Didayi family is usually monogamous, although polygynous unions are not entirely ruled out. The simple or nuclear families are preponderant in hills and cut-off areas whereas extended families are found in plains area. The family ensures socio-economic rights and obligations of each member. The inter-family relationship within a lineage is more cordial and cooperative. Among the Didayi various ways of acquiring mates are come across, such as marriage by neogitation (toso), marriage by service (gariya), and marriage by ceremonial capture (Udalia). The junior leviration is prevalent in their community, but only through the consent of the concerned woman. The ritual kinship (masat) or bond friendship is prevalent. The Didayi kinship is bifurcate collateral type and plays a pivotal role in the maintenance of the patterns of behaviour, usages, inheritance, succession and also in socio-economic, socio-political and socio-religious nexes. Further, kinship ties also promote mutual help and co-operation among kinsmen thereby the Didayi ethno-cultural group becomes cohesive and compact.

**Political Life :**

In the recent past, the Didayi political organization was vibrant, operative, useful and simple and maintained internal as well as external affairs of the community. Their political organization had a three-tier system, such as (i) the apex organization concerning all members of the tribal group; (ii) the regional organizations based on geo-cultural factors consisting of contiguous villages and (iii) the village level organizations. The headman of the apex organization was the Naik. The meeting was held annually and attended by the headmen of village level organizations or councils. Inter-village, inter-clan as well as the disputes which could not be resolved in other levels were referred to the apex organization and the

decisions taken at this level was final and binding for all. Breaches or violations of customary rules were adjudicated and punishments were awarded to the culprit. But their attitude in the administration of justice was more restitutive than repressive. The apex political organization had its headquarters at Kudumulugumma. But currently it is defunct. The regional organizations and village organizations/councils (*lepar)* have been eclipsed due to the introduction of the Panchayati Raj System. Under the provisions of the 73rd Constitutional Amendment Act of 1992 applicable to the 5th Schedule Areas, the gram sasan *(gram sabha)* has become functional in the village level with elected people's representatives. It has also envisaged a 3-tier statutory system, such as the Zilla Parishad, Panchayat Samiti and Gram Panchayat.

It is interesting to note that despite functioning of the statutory panchayats,the traditional village Council leaders, such as the Nailk *(the secular headman),* the Pujari *(the sacerdotal head or priest)* and the Disari *(the medicineman-cum-magician)* are still enjoying confidence of common men in their community. The Palli Sabha opens opportunity for the participation of the traditional leaders. Therefore, it may be construed that among the Didayi the old and the new system are more complementary than conflicting. It reveals that the Didayi people have maintained the statutory system and simultaneously retained their love for the traditional socio-political organization.

**Economic Life :**

The Didayis do not stay at any economic stage but possess and practise a number of economies, such as settled agriculture, shifting cultivation, domestication of animals, collection of edible as well as non-edible forest produce, hunting, fishing, kitchen gardening and wage-earning. The Didayi living in plains area cultivate low land with plough and grow paddy as the principal crop. Those who live in the hills area practise slash and burn/shifting cultivation in hill slopes although this type of cultivation is low yielding and harmful for the conservation of the eco-system. The shifting cultivation method follows multi-cropping and broadcasting. If one crop fails, other crops may sustain their livelihood for sometime. In low-land cultivated land there is monocropping as well as transplantation and the main crop grown is paddy. In the uplands they grow millet, legumines etc. In the Kitchen gardens near their homestead, they grow seasonal vegetables, chilly, gourds, tobacco, etc. Food-gathering which includes collection of minor forest produce is a significant economic pursuit, but it is gradually decreasing due to depletion of forests. The Didayis collect fuel wood for their own consumption and sell them to outsiders. Their favourite drinks are prepared out of mahua and palm juice. The palm juice is collected and formented to become an intoxicant. The hunting has become very occasional due to depletion of forests. The Didayi of the cut-off area near the Balimela reservoir have started fishing through country boats and nets. The Didayi domesticate several animals and birds, such as cow, buffalo, oxen, goat, sheep, fowl and hen, etc. Members of landless families engage in wage-earning, both in agricultural and non-agricultural sectors. They derive the maximum annual income out of agricultural practices which forms 36.87 per cent of their total income, followed by food-gathering (27.35%) and wage-earning (17.24%) and the lowest income is earned through petty business

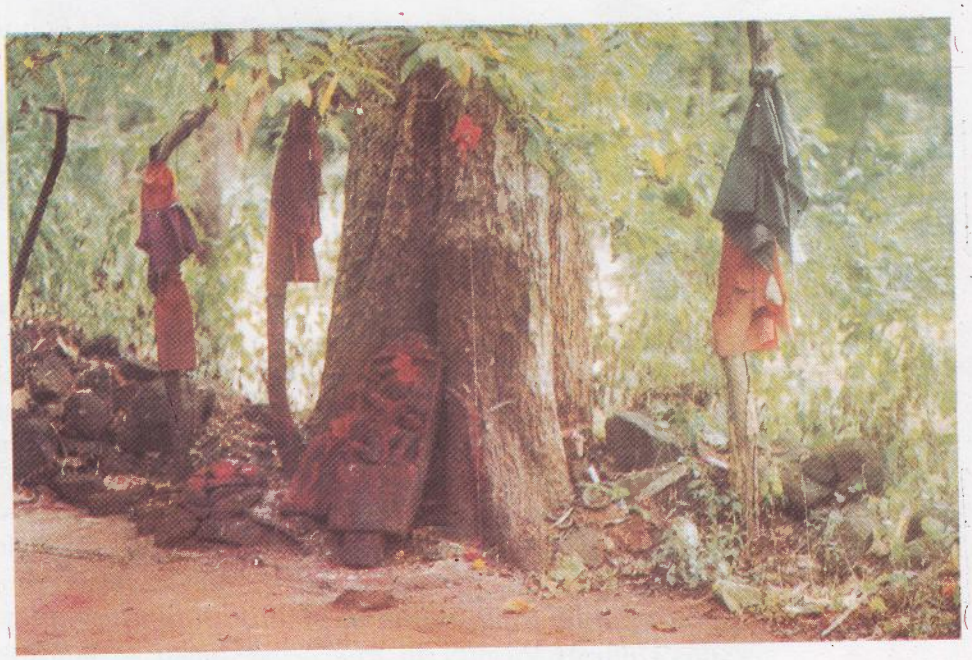
(0.69%). (cf. COATS Report,2002). The maximum expenditure incurred by them is on food (54.78%), followed by fuel (9.97%) and clothing (6.86%) and the lowest towards construction of new house (0.17%) (cf. COAT Report,2002).

The Didayi have a subsistence economy, but some families are found below subsistence level. The number of households below poverty line is preponderant in hills area, followed by cut-off area and plains area. In brief, as high as 70 per cent of households in the entire Didayi inhabited area is below poverty line, which appears to be quite alarming. There is absence of elaborate division of labout in their community and in other words, their simple division of labour is based on age and sex. The labour is inalienable and often organized through cooperation on kinship orientation. Their concept of capital (both in shape of cash or kind) is rudimentary. All the economic pursuits are labour intensive. Their entrepreneurship is conspicuous by its absence. They derive their subsistence mainly through the exploitation of natural resources. In the interior areas, goods as well as services are directly exchanged. Their technology is by and large indigenous and simple. The monetization of economy has already made in-road in the Didayi area. Their market exchange is concentrated in nearby weekly markets. Besides economic exchange, there is prevalence of extraeconomic exchange in their community in the shape of gifts and presentations. There is lack of profit-making endeavour among them. The production decision is taken at the household level. Ragi is the principal food of the Didayi and rice, suan, edible roots and tubers, fruits, green leaves, vegetables etc. supplement their diet. Regarding the etiquette of food taking it is noticed that the housewife usually eats her food after all members of household have eaten. In all economic pursuits, Didayi women are found to be more hard working, more responsible and more honest. Their contribution to the household economic pool is significant and substantial.

**Magico-Religious Life :**

The Didayi religion which speaks of their mental attitude towards the supernatural is manifested through beliefs and rituals. Thus, supernatuiralism is the core of all religious. The moral and ethical values are maintained in the society through religion which binds the people in the group together. It also integrates people and rationalizes their behaviour. The Didayis are polytheists. Their supheme deity is the Mother Earth. They believe in a number of deities, both male and female, who are benevolent. They shower blessings on the devotees who propitiate them and organize ceremonies and festivals from time to time. The Mother Earth, which is the sustainer of life, is represented by ant hill. There are a number of sacerdotal officials to worship various deities. The chief priest is known as the Palasi. The Guniar or magician performs different rituals while treating patients who suffer from various diseases amd ailments. They also believe in a number of spirits, benevolent, malevolent and ambivalent. The festival, known as Lendi Pande marks the beginning of agricultural operations, is celebrated in the month of Magha (Jan-Feb) for the honour of Mother Earth. In various ceremonies animals and fowls are sacrificed. The post of religious priest is hereditary. The Palasi fixes the dates of festivals and ceremonies and intimates the Naik, the secular chief for necessary arrangements with the help of villagers. Biru Bhairo is one of important deities installed in the hill slope near the village, Oringi and is

A Didayi woman



Hundi – the village deity of Didayi

worshipped regularly by the village priest. An annual festival is celebrated in the honour of the deity and Didayi people of nearby villages propitiate by offerings. The consert of Biru Bhairo is known as Nanangri who is also worshipped in the same spot. However, there is no shrine for these deities and a number of steps leads to the spot of worship.

**Ethos, Ideology and World View :**

The Didayi possess a rich cultural heritage and present a repository of myths, legends, folk-lores, anecdotes, riddles, folk songs, oral literature, proverbs, ethnomusicology, dance and other forms of performing art. They constitute a ' closed society with open mind'. They are simple, hospitable, humourous, honest and sober. They have a high sense of tolerance and are contended with what they have. They are sympathetic towards their neighbours, fellow men, plants, animals, birds, maintaining a positive symbiosis.

In spite of their relative deprivation and limited natural resources, they have maintained their basic ideology reflected in their core-culture. They are against vengeance, treason, betrayal, usurpation etc. They feel guilty for non-payment of debts for an unreasonable period. They are not docile or timid as reported by earlier ethnographers. With mutual love and affection they are eager to resolve conflicts in all facets of life. In spite of their relative isolation, inaccessibility and limited contact with outsiders, they have shown a very receptive attitude towards modernization, induced change or planned development intervention and the like. With the passage of time, several changes have been noticed in their total way of life, but they have retained their core-culture, which provides them with the most powerful apparatus for sustenance; and they have maintained their cultural identity with distinctiveness.

Although their oral history is shallow, their would view is rich with strong ethical consideratoions. They very much distinguish between the virtue and vice, right and wrong etc. and accordingly shape their behavioural pattern in the community. They consider themselves not as poor and impoverished but relatively deprived and believe to achieve something out of their hard-work and honesty. They have a number of growth positive traits which could be utilized as capital for planned development intervention.

**Development Intervention :**

The planned development intervention among thre Didayi is a post-independence experience. We come across two strategies, approaches and efforts among them; one through the block and the other through the micro-project. During the Third Five Year Plan period (1961-66) Kudumulugumma and Govindapalli (re-named as Khairaput) blocks were converted as Tribal Development (T.D.) blocks because of preponderance of vulnerable ethno-cultural groups. The block development effort was multi-sectoral and included establishment of co-operative societies, weekly markets, limited communication facility through construction of roads, sub-centres of Primary Health Centre, educational institutions, Livestock Centres, solar photovoltaic lights in limited

number of villages, provision of housing facilities under Indira Awas Yojana, Self Help Groups (SHGs) for women empowerment, etc. The Block development effort still continues in a limited scale.

The micro-project approach ushered in new hopes and aspirations among the Didayi people when it started during the financial year, 1986-87 with the nomenclature, Didayi Development Agency (D.D.A.) with hundred per cent funding from Government of India under Special Central Assistance (S.C.A.). Although initially only 7 villages i.e. 4 in plains area and 3 in hills area were covered in the micro-project, during the financial year, 1993-94 all the Didayi villages were covered. From 1986-87 to 2001-02 a sum of Rs.24,686,000/- was received by the micro-project out of which Rs.18,512,352/- was utilized for various development programmes and the unutilized balance available was to the tune of Rs.16,321,028/-. Important multi-sectoral development programmes implemented in the micro-project are, (1) Developmnent of Agriculture; supply of agricultural implements, introduction of high-yielding varieties of crops and cereals, pulses, oil seeds, ginger, turmeric, chilly and vegetables; (2) Development of horticulture; grafted mango, pineapple, banana, coconut, citrus fruits, cashew etc.; (3) Introduction of irrigation facilities, water harvesting structure, diversion weirs and check dams; (4) Fishing, in the cuit-off area near Balimela reservoir through supply of nets and boats; Animal Husbandry, supply of plough bullocks, goatary, poultry etc., (5) Provision of potable water through tube-wells, open wells and cisterns; (6) communication facilities through roads, link roads, etc.; (7) Health Programmes, only supply of medicines; (8) Educational Development, Adult Edcation Centres, Total Literacy Campaign, Post Literacy Programme through National Literacy Mission, I.C.D.S. Programme through Anganwadi Centres, limited vocational training etc.

**Development Perception**

From the foregoing description it is evident that the development experience among the Didayi is roughly four decades old and more precisely it is only two decades old with the emergence of the micro-project efforts. But before that they were left to, as humans, their culture and nature. The cultural influence as well as natural influence had direct bearing on their way of life. As humans are creators and bearers of culture and live within an ecological nexus, culture matters. In words of Sahlins, "Culture, as a design for society's continuity, stipulates its environment. By its mode of production, by the material requirements of its social structure, in its standardized perceptions, a culture assigns relevance to particular external conditions (1977:215). Sahlins further opines that there exists dialectic interchange between culture and environment. The Didayi since time immemorial lived in the bosom of nature, exploited nature for their sustenance and perpetuated their culture, amidst persistence and change. The saga of their endogenous development is, of course, little known since they constitute a simple society with simple social structure, maintaining 'mechanical solidarity' in Durkheimian dictum. Moreover, they were preliterate and their level of awareness was low. But they are aware of the maladies of deforestation, erosion and loss of top soil., conservation of natural resources, preservation fauna around them, etc. For example, while collecting edible roots and tubers from forest they do not entirely

extract every thing but leave some to grow during the next year. Similarly while hunting game animals, they usually do not kill pregnant animals, so that the species cannot multiply. Moreover, they are rational in their attitude towards optimum utilization of natural resources. It is evident that they do not destroy or kill the totemic animals, plants and objects and clan members are conscious about their obligations. Every culture manifests a three-layered system, which includes the techno-economic sub-system at the base, social-structural sub-system in the middle and the ideological sub-system at the top and the system operates through interrelationship among the sub-systems. The techno-economic sub-system interacts with the social-structural sub-system directly and both combinedly interact with the ideological sub-system. Thus ideology becomes the superstructure on the foundation of cultural order. The Didayi is no exception.

The Didayi perception of development appears to be simple with limited life aspirations in consonance with their simple techno-economic base. Therefore, they believe in the development in situ through adaptation in order to maximize their life chances and accordingly develop coping mechanism for sustenance. A section of them did experience the trauma of displacement consequent upon the construction of Balimela hydel project and without adequate rehabilitation measures they themselves strived to tolerate the shock. They provided hydro-electric power for other's comforts but remained in darkness which is paradoxical. They renewed their vitality and vigour in order adopt themselves with new environment.

Modern medicine vis-à-vis ethnomedicinal practices, schooling vis-à-vis enculturation, panchayati raj system vis-à-vis traditional politico-jural set up, modern economic pursuits vis-à-vis traditional subsistence, techniques, etc. appeared to be dilemmatic and deleterious to the Didayi for some time. But by virtue of their sobriety, sociability and proneness for acceptance of new life-style, they have come forward to receive them. They desire to replenist their own culture and traditions and simultaneously accept the induced change for 'good life' and 'happy life'.The Didayi culture is replete with some growth-positive elements which need to be taken care of by development practioners while implementing planned development schemes and programmes in their habitat. For example, they are prepared to go for Sloping Agricultural Land Technology (SALT) in order to eschew the ravages and degradation caused by swidden cultivation.

The Didayi women have always maintained their high status in their society. Besides their exclusive role in maintaining the household and upbringing of children, they contribute substantially to the economic pool of the family. Although the percentage of literacy is proverbially low among the Didayi women, their participation in outdoor activities, their role in household level decision-making process and their endeavour in the management of economy show that they are more aware of perpetuating their ethno-cultural identity. As a measure for the empowerment of women Self Help Group (SHG) strategy has been introduced. The Didayi women have actively participated in organizing SHGs in their villages with the initiative and interests of G.Os and N.G.Os. They get incentive money to the tune of Rs.10,000/-from D.R.D.A. to undertake business along with their own contributions. The women folk take the decision regarding the commodity or

commodities to deal with in the business. In fact, SGH works as a foundation in a modest way for women empowerment. In an interview, a middle-aged Didayi woman in a plains village stated that she managed to store a handful of rice everyday in order to exchange the same for money for making payment of her SHG subscription on monthly basis. Further, one notices competition among S.H.Gs when more than one SHG is functioning in the same village. With little encouragement from outside and guidance in business and marketing, they are bound to develop entrepreneurial skill and maximize their profit. It is gratifying to note that the Didayi women who are working as the head of the SHG unit are acquainted with the maintenance of accounts, deposit and withdrawal of money from bank and business transactions. It is noticed that male members of households are not standing on their way for pursuing SHG efforts, but encouraging them and extending support.

The Didayi is a small fragment of one of the segments (folk) of great Indian civilization, living within the country, which is characterized by pluriculturalism multiethnicism and multilingualism. Their tribal economy which was more or less self sufficient and autonomous has, during twentieth century, experienced peasantization. Further, monetization of economy, modernization of life-style and later on induced or directed social change through development efforts, etc. have posed challenges in their society. In their simple comprehension, they support sustainable development and admit that it can not be achieved without people's participation. The Didayi youths are active supporters of the Panchayati Raj system and the ongoing development process. As repository of strength and vigour of the community, the youth is to be confided to put their body and soul together to get rid of pangs of abject poverty, high incidence of illiteracy and the horror of unemployment. If human capital formation is the need, the youths are to be trained for upgradation of their skills, so that ultimately the tribal community as a whole will derive the benefit to become self-reliant and stand on their own. The youth has the ability to fight against injustice exploitation of all kinds, end with their vulnerability and pave the path for enrichment of their quality of life vis-à-vis enhancement of the quality of environment. In course of our study among the Didayi, we have identified a number of youths who understand their plight and are prepared to shoulder responsibility as and when thrusted upon them. Keeping in view our objective of mainstreaming or integration with the national culture, we may suitably utilize the task force consisting of the Didayi youth to save them from socio-economic maladies, relative deprivation, exploitation and further marginalization. The youth will promote participatory development by bridging the hiatus between the development practitioner and the intended beneficiaries. Therefore, the youth should not be eclipsed further from the development niche.

An individual Didayi person may be shy in the presence of outsiders, but when we interact with a group in a friendly manner, they reciprocate and put forth their problems and possible solutions as per their own life experiences and perceptions. In this connection, Focus Group Discussions (FGDs ) were organized in the Didayi habitations in order to elucidate their own views. To illustrate some glaring issues, we may state that their propensity to save for future has increased; they are receptive to small family norm; they are prepared to accept moderniztion in agriculture, kitchen gardening and domestication of animals; they are prepared

to eschew the practice of swidden cultivation, provided some viable economic alternative pursuits are made available to them; they are quite receptive for promotion of literacy as well as education;they are prepared to accept modern medicine along with their ethnomedical practices; they need potable drinking water round the year and are aware of water-borne diseases which are fatal, etc.

It may be concluded that the Didayi as a primitive tribal group / vulnerable ethno-cultural group have internalized development intervention and still need external help, both monetary and expertise-based, in order to pave the path of development in future.

**Acknowledgment**

I express my hearty gratitude to Shri Pyari Mohan Mohapatra, IAS (Reted.), Hon'ble M.P. (Rajya Sabha) and Chairman, Council of Analytical Tribal Studies (COATS), Koraput for assigning me the Planning Commission-sponsored study among the Didayi, as its Principal Investigator and the paper is the outcome of fieldwork among the Didayi people during 2001-02.

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# TRIBAL DEVELOPMENT THROUGH MICRO PROJECT

*P. K Acharya*

**Abstract :**

Under the Tribal Sub-Plan approach, the Government of India has set up several micro projects for all round development of the Primitive Tribal Groups in the country. Each micro project has its own administrative structure, annual action plans and budgets for implementing schemes and programmes for the development of the selected tribal populations. Over the years, crores of rupees have been spent by the micro projects. But have they achieved their targets of improving the living standard of the tribes? This paper has analyzed the functioning of Lanjia Saora Development Agency, a micro project established in 1984 at Puttasingi in Rayagada District of Orissa and has assessed the achievements made by it relating to development of the Lanjia Saoras. Furthermore, it has identified some factors that have acted as loopholes in the functioning of the micro project and has therefore mentioned some measures to plug these loopholes.

Since the 5th Five Year Plan (1974-79), the Government of India has introduced the Tribal Sub-Plan approach to bring in a holistic development of the tribes. As an integrated component of the Tribal Sub-Plan approach, micro projects have been set up especially for the development of the Primitive Tribal Groups. In Orissa, 17 micro projects have so far been established to develop 13 Primitive Tribal Groups. Lanjia Saora Development Agency set up at Puttasingi of Rayagada district is one among them. It concentrates all of its activities to develop the Lanjia Saoras settled in the 21 villages of Sagada Gram Panchayat. This paper has been prepared basing upon an evaluative study undertaken during November 1999 to July 2000 to assess the achievements and functioning of the Lanjia Saora Development Agency, Puttasingi between the period from 1983-84 to 1998-99 in making an overall development of the Lanjia Saoras.

**Objectives :**

1. To examine whether the guidelines for the development of Primitive Tribal Groups are clear and adequate, and to suggest changes in the guidelines, if necessary.

2. To develop broad indicators for assessing the level of development of Sagada Gram Panchayat in 1998-99 and to find out the contribution of the Lanjia Saora Development Agency towards achievement of the existing level of development.
3. To assess the factors contributing to the success and failure of Lanjia Saora Development Agency, especially in its functioning.
4. To recommend appropriate strategies for improving the functioning of Lanjia Saora Development Agency.

**Methods Adopted:**

Sagada Gram Panchayat has 21 villages with 726 households and all of these have become beneficiaries of multiple development schemes implemented by The Lanjia Saora Development Agency during the period from 1983-84 to 1998-99. Keeping this in view, all the 726 households have been taken as the universe of study and from among them 50 per cent (i.e. 363 households) representing all the 21 villages have been selected by random sampling method for primary data collection. However for data collection on maternal malnutrition $1/6^{th}$ (i.e. 121 households) of the universe has been selected by random sampling method. Thereafter, from each sample household the head of the household has been taken as the respondent for interview. The primary data have been collected by applying interview, participatory observation and focussed group discussion methods and by using some schedules. The secondary data have been gathered from official records, research based books and journals.

**Major Findings:**

1. During the period from 1983-84 to 1998-99, the Lanjia Saora Development Agency was funded by three agencies, namely the Scheduled Tribe and Scheduled Caste Development Department of the Government of Orissa, the District Rural Development Agency of Rayagada and the Integrated Tribal Development Agency of Gunupur in Rayagada district.

2. Among the three funding agencies, the Scheduled Caste and Schedule Tribe Development Department was the major contributor with nearly 67 per cent share of the average annual grant received by the micro project during the period from 1983-84 to 1998-99.

3. In case of all the three funding agencies, there was a repeated rise and fall in the year wise allotment of grants, for which it was difficult for the micro project to work according to the action plan. Moreover, there was a lack of combined decision among the three funding agencies as to what extent and on which development sector each agency would allocate funds for the micro project.

4. The present economic backwardness of the Lanjia Saora people in the micro project area was primarily due to very low expenditure on income generating schemes i.e. 13.36 per cent of the average annual expenditure during the phase 1 (1983-84 to 1989-90).

5. There was a lack of economic planning in the expenditure. As there was already a regular Junior Clerk-cum-Typist, the expenditure on appointing another Typist on contract basis appeared illogical. Furthermore, in view of the office jeep remaining out of order, the expenditure incurred towards salary of the Driver seemed unwise. On the other hand, the money on other development programmes was mostly directed towards the spread of education and road communication and therefore other sectors like health, rural electrification and publicity were very much neglected. Similarly,

among the income generating schemes, maximum expenditure was incurred for implementing the horticulture programme. Consequently, expenditure on schemes like irrigation, plough bullock, soil conservation and agriculture was very much limited and there was no expenditure towards implementation of schemes like goatery, dairy, bee-keeping, leaf-plate making, broom stick making, rope making or running petty business.

6. As far as implementation of the schemes is concerned, in horticulture scheme, cashew plantation was given top most priority. In nursery scheme, priority was given on raising the orange and kageji lemon seedlings. In agriculture scheme, "supply of agricultural implement" was totally neglected, while the "supply of seed, pesticides and fertilizers" was given maximum priority. There was a regular implementation of the soil conservation scheme whereas similar attention was not given towards implementation of irrigation scheme.

7. An assessment of the development programmes and schemes implemented by the micro project revealed that the availability of health care services, excepting the immunization coverage, within the project area was poor. The gross accession ratio (i.e. percentage of villages having the facility) of health Sub-Centre and Primary Health Centre was zero for the villages of project area. This resulted in the occurrence of 2,381 maternal mortality ratio, 341 maternal mortality rate, 440 infant mortality rate and 726 under 5 mortality rate during 1998-99.

The micro project had made sufficient provision of safe drinking water through establishment of tube wells and drinking water wells so that 84.02 per cent of the tribal households had availed of it during 1998-99. However, similar attention was not given by the micro project to improve the sanitation aspect of the project area and hence no household was found to have latrine.

The incidence of malnutrition during 1998-99 was 65.94 per cent among mothers and 83.60 per cent among 1 to 5 years of old children, which speaks about inadequate availability of the nutritional as well as healthcare services in the project area. This is evident from the fact that the gross accession ratio with regard to Anganwadi Centre was only 19.05 in the project area.

For extending the pre-primary education, non-formal education and adult education facilities, the micro project had set up 16 Gyan Mandirs. Besides, seven primary schools, established by the School Education Department, were also functioning. The gross accession ratio for Gyan Mandir was 76.19 and the same for primary school was 33.33. However, the gross accession ratio for upper primary school, high school and college was zero. Consequently, in 1998-99, the percentage of 6 to 11 years population enrolled at primary level of education was 44.16 per cent with a figure of 53.65 per cent for boys and 34.72 per cent for the girls. At upper primary level of education, the percentage of 12 and 13 years population enrolled was 25.14 per cent with a sex wise break up of 37.93 per cent for the boys and 12.50 per cent for the girls during the same year. At the secondary level of education the percentage of 14 to 16 years

population enrolled during 1998-99 was 17.44 per cent with a sex wise variation of 25.77 per cent for the boys and 6.67 per cent for the girls.

The total literacy rate for 1998-99 for the project area was found to be 42.00 whereas the male (15+) and female (15+) literacy rates were calculated to be 49.84 and 19.26 respectively. It is indicative from these findings that the impact of the literacy schemes was significant among the tribal population in general although the females were far behind the males in literacy rate. The absence of upper primary school and high school within the project area was reported to be the major stumbling block for increasing the percentage of enrolment at upper primary and secondary levels of education.

The micro project had neglected to implement female oriented schemes and involve females in health and education programmes and probably because of this, the percentage of females (15+) correctly aware of the micro project and its activities was as low as nearly 47 per cent in 1998-99. Besides taking seedlings from the micro project, all total 50,585 plants were raised by the tribal people and out of them 21, 685 were surviving till 1998-99.

The irrigation facility provided by the micro project for the tribal people of the project area was very much limited. Moreover, the micro project remained completely aloof from implementing the welfare schemes like bee-keeping, goatery, piggery, vocational training and India Awas Yojana.

By the year 1998-99, 47.93 per cent of the beneficiary households were found to have crossed the poverty line by taking Rs. 12,500=00 annual household income as the poverty line indicator. However, when Rs. 12,500=00 annual household income, availability of daily at least two square meals to all members of household, enrolment of all school going age children, and availing the minimum healthcare facilities such as immunization and safe drinking water were taken together as parameters for crossing poverty line, only 19.56 per cent of the beneficiary households were found to have crossed the poverty line in 1998-99. It shows that owing to the large scale implementation of plantation schemes, the annual household income of the tribal beneficiaries had improved but similar improvement had not taken place in other spheres of social life.

8. The major factors that had affected the functioning of the micro project greatly were: (i) wide deviation of actual expenditure on different schemes and programmes from the expenditure projected in the action plan, (ii) delayed payment of funds, (iii) absence of financial institutions as well as markets within the project area, (iv) lack of working capital to run the "Lanjia Saora Farmers' Cooperative Society". (v) violation of guidelines, (vi) lack of regular posting of technical staff, (vii) non-regularization of the service of the field staff, (viii) non-payment of medical allowance and non-provision of rewards as well as incentive for exhibiting excellence in the assigned tasks to the field staff, (ix) lack of recording of the extent of economic exploitation of the tribal people, (x) negligence in proper maintenance of the official data, (xi) lack of road communication and

transport facility to most of the villages, (xii) lack of provision of toilet, teaching and learning materials, games and sports equipments, vocational training equipment, first aid box, height and weight measuring instruments, and safe drinking water equipment to Gyan Mandirs, (xiii) adherence to supernatural beliefs and dependence on indigenous healers with regard to healthcare, and (xiv) parental discouragement to girls' education.

**Policy Recommendations :**

Keeping in view the aforesaid major findings, following policy recommendations have been made for the development of Primitive Tribal Groups :

**Modification in guidelines :**

(i) The available land suitable for dry / wet cultivation in each village should be distributed not to all as has been mentioned in the guidelines for development of Primitive Tribes but only to the households having aptitude and interest to pursue agriculture.

(ii) The planning of irrigation system should not follow, rather precede, the planning of cropping pattern so that the cropping pattern is designed in accordance with the extent of water available in khariff and rabi seasons.

(iii) A definite plan is to be worked out as regard the types of supplementary sources of income to be provided to the people. In selecting the types of supplementary sources of income, it is to be seen that adequate number of women specific sources of income are included.

(iv) Cultivation of green leaves and other vegetables should be encouraged by providing the beneficiaries with necessary awareness, guidance, inputs, training and market facility.

(v) Villagewise estimation of the products from agriculture, horticulture, backyard plantation, vegetable cultivation and minor forest produce collection is to be made every year and a plan is to be worked out for the purchase, storage, processing and sale of these products involving the project staff and the local tribe, especially the females.

(vi) Villagewise and monthwise record of the extent of malnutrition is to be maintained by the project staff and accordingly a plan is to be worked out for provision of necessary supplementary food and treatment to the persons affected by malnutrition.

(vii) Necessary equipment and training are to be provided to the Multi-Purpose Workers of the Gyan Mandirs to organize games and sports among students and to impact vocational knowledge and training to the students and villagers on different supplementary sources of income to be introduced by the micro project in the locality. Inter Gyan Mandir academic, games and sports competitions should be organized.

(viii) The annual action plan of the micro project should limit to 25,45 and 30 per cent of its total expenditure towards administrative expenses, income generation schemes and other development programmes respectively. The action plan should be approved by the Governing Body of the micro project two months prior to the commencement of every financial year. Nearly 60.00 per cent of the funds required as per the annual action plan of the

micro project is to provided by the Scheduled Caste and Scheduled Tribe Development Department and the rest 40.00 per cent should be provided by the District Rural Development Agency and the Integrated Tribal Development Agency of the district in which the micro project is located. The administrative expenses of the project is to be met totally from the grants allotted by the Scheduled Caste and Scheduled Tribe Development Department.

**Strengthening of development process :**

(i) A special grant of Rs. 5 lakh should be sanctioned as the initial working capital of the Lanjia Saora Farmer's Cooperative Society. The Society is to keep within 5.00 per cent of its profit for increasing its working capital.

(ii) The micro project should set up processing units to sell the tribal products in a processed way.

(iii) Weekly markets are to be set up at two places within the project area.

(iv) Communication and irrigation facilities are to be expanded on priority.

(v) All primary schools located within the project area should be upgraded to upper primary schools. Hostel facility should be provided to two more schools by the Scheduled Caste and Scheduled Tribe Development Department.

(vi) The facilities available under the District Primary Education Programme and the Mid-Day Meals scheme should be provided to the students getting pre-primary coaching and non-formal education at Gyan Mandir.

(vii) In order to improve their organizational activities, each Multi-Purpose Worker and Field Worker should be provided with a bicycle with Rs. 50=00 monthly payment towards its maintenance cost. Further, the micro project is to bear all the medical expenses required for the treatment of its staff suffering from illness. Every year, a sum of Rs. 5000=00 is to be spent for giving financial rewards or incentives to the Multi-Purpose Workers and Field Workers for showing excellence in the tasks assigned to them.

(viii) A sum of Rs. 2 lakh should be kept as working capital for continuing the nursery scheme. The micro project is to negotiate with the authorities of the District Rural Development Agency, Rayagada and the Integrated Tribal Development Agency, Gunupur for the sale of the seedlings raised at its nursery. The profit obtained from such sale is to be kept for increasing the working capital.

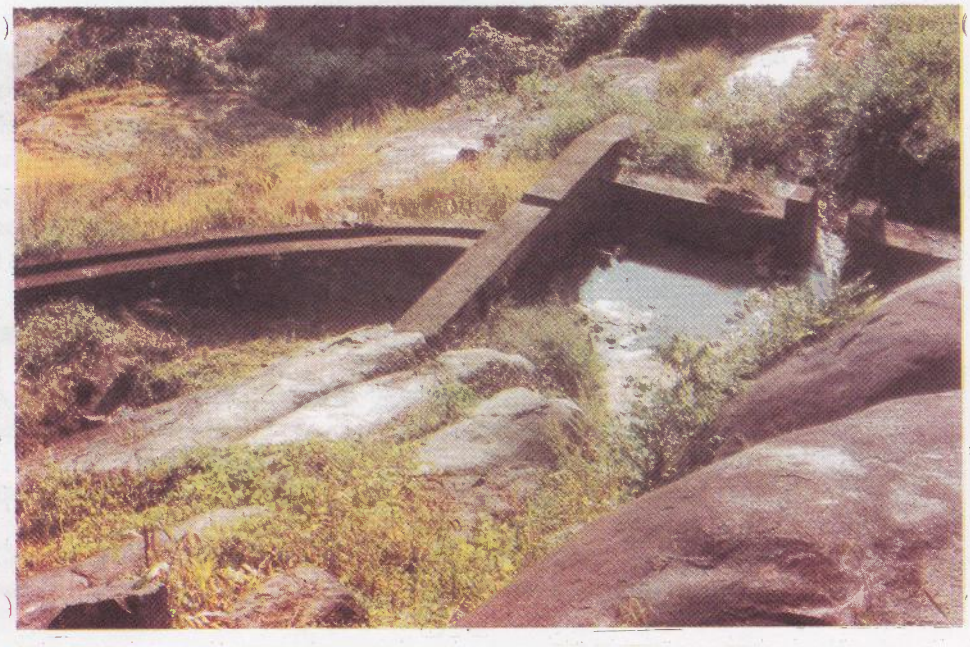
(ix) The annual grants extended to the micro project by the Scheduled Caste and Scheduled Tribe Development Department should in no case be less than Rs. 20.00 lakh for the next five years.

(x) There should be always a regular appointment of the technical staff of the micro project.

(xi) The micro project is to take necessary official measures to motivate the authorities of gramya bank or any nationalized bank to open branches within the micro project area.

(xii) The micro project should be provided with a separate grant of Rs. 10.00 lakh which should be kept as fixed deposit in a bank so that the micro project can taken loan against it for its own functioning specially when the grants would not be received in time.

Plantation site, LSDA Seranga area



Minor Irrigation Project, LSDA Seranga

(xiii) The micro project is to keep proper recording of the data regarding the extent of malnutrition, land alienation, bonded labour and indebtedness in different villages and percentage of enrolment, attendance and dropout at schools and Gyan Mandirs. Further, it should keep record on the villagewise extent of collection of minor forest produced and products under horticulture schemes. The official records showing data on action plan, approval of the plan at Governing Body meetings, allocation of funds, expenditure incurred under different items, and achievement made in different sectors or development should be preserved for future evaluation study. Necessary precautions should be taken by the Special Officer as well as the Clerk of the micro project to prevent missing of these records. The annual action plan should not only project the scheme and itemwise financial requirement, it should also highlight the targets to be achieved and the steps to be taken to achieve the targets. This should be thoroughly discussed and approved at the Governing Body meeting where the technical staff of the micro project who would design the annual action plan should participate in the discussion.

(xiv) The Special Officer of the micro project is to be permitted to modify the action plan in consultation with the technical staff in exigency situation and take post-facto approval of it at the next Governing Body meeting.

**Awareness generation and capacity building :**

(i) The micro project should have its own audio-visual system to organize awareness programmes on different income generation schemes as well as other development programmes at selective places.

(ii) Audio-visual recording of the women-specific sources of income like leaf plate making, rope making, tamarind powder making etc. should be demonstrated during awareness programmes.

(iii) Messages on healthcare, nutritional care, population control, girls' literacy etc. should be conveyed to the people through audio-visual system in awareness camps.

(iv) A selected group of at least 30 tribal educated women with entrepreneurial aptitude from different villages is to be sent every year by the micro project to visit different places of the state where the women groups under the Self Help Group (SHG) scheme are successfully functioning. These tribal women should later on be motivated and provided with adequate training and necessary input to take up different income generation schemes introduced for them by the micro project.

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# SHIFTING CULTIVATION & TRIBALS OF ORISSA: A STUDY

*J.P.Rout*

**Introduction :**

Shifting cultivation and its practice are said to be pernicious and eco-hostile from the standpoint of dependence of tribal people on forest-clad hill slope.

Development intervention for viable alternative methods of livelihood for tribal people to give up shifting cultivation have been introduced in certain areas. This paper attempts to give a graphic presentation of the practice of shifting cultivation by different tribes mostly the Primitive Tribal Groups of the State and the field survey data of Dr. Mooney showing the extent of shifting cultivation along with the data of Remote Sensing survey of Orissa Remote Sensing Application Centre(ORSAC).

The latest field survey data on shifting cultivation (2001) by SCSTRTI, and collected facts and figure show perceptible difference from that of ORSAC. The dry functional parameters of mapping by ORSAC are analyzed. The symbiotic relation of tribal people or what is known as the constructive dependence on forest is also analyzed in the context of shifting cultivation.

One major source of food security of tribes comes from what is known as shifting cultivation or more appropriately *swiddening* – a system of livelihood support dependant upon the age-old Primitive pre-agricultural practice. At least, 109 tribes practising shifting cultivation have been identified in India. It is practised in 233 blocks of 62 districts spread over 16 States and nearly one million people are under this cultivation (Fernandez). It is estimated that around 25 percentages of tribals in India are shifting cultivators (Reddy).

In Orissa, the shifting cultivation is practised in 114 Blocks in 17 Districts (ORSAC) 12 nos. of tribes practise this form of cultivation in the northern and southern tracts of the State stretching across the Eastern Ghats (Mooney).

Because of its spread, growing loss of potential green cover and related imbalance in eco-habitat, the Forest Policy, 1952 and the National Commission on Agriculture, 1976 suggested that shifting cultivation be banned, providing the tribal practitioner alternative systems of livelihood support. The alternative fields of livelihood options, are identified in the fields of wetland cultivation, switch over to horticulture on differing gradients of mountain slopes, replacing the shifting cultivation. Besides agriculture, various development interventions are earmarked for them to get used to other source of income generation.

The present paper makes an humble attempt to study the problem of shifting cultivation vis-à-vis the cumulative impact of different interventions to dissuade the tribal shifting cultivators from the age-old practice. The paper also goes deeper into analyzing the facts and figures suggesting the extent of shifting

cultivation, by eye estimation, land-to-land survey and also Remote Sensing mapping of the area under shifting cultivation. The accurate data on the spread of shifting cultivation area, then and now, therefore, assumes very much significance. It analyses the data of the survey made by Dr. Mooney, ORSAC and the data of baseline survey conducted by SCSTRTI in the Micro Project areas of State.

**Eye-estimation and collection of field data on shifting cultivation by Mooney :**

The figures quoted by Dr. Mooney, one of the Senior Forest Officers of Forest Department, Orissa and others were totally based on eye estimation and collection of data by field staff. According to the rough and approximate figures drawn by Dr. Mooney, the total area affected by shifting cultivation in Orissa was 12.770 Sq. miles and the total number of Primitive tribal communities involved in shifting cultivation was more than 9 lakh and 32 thousand. It exists in the hilly tracts between Bambra and Redhakhol and on the steep sloping portions of Bonai and Pallahara beyond which it extends to the Keonjhar district. The other infected area is the mountainous country in South Orissa comprising of Ganjam agency, Koraput, the Khandamals and the Southern half of Kalahandi district lies towards the north extremity of Eastern Ghats.

It was estimated by Dr.Mooney that about 12.770 Square miles or 32,69,120 hectares, which was one-fifth of the total land surface of our State, was affected by shifting cultivation. Dr.Mooney had conducted survey of areas affected by shifting cultivation and it is reflected in ***Table-"A" & Table "B"***.

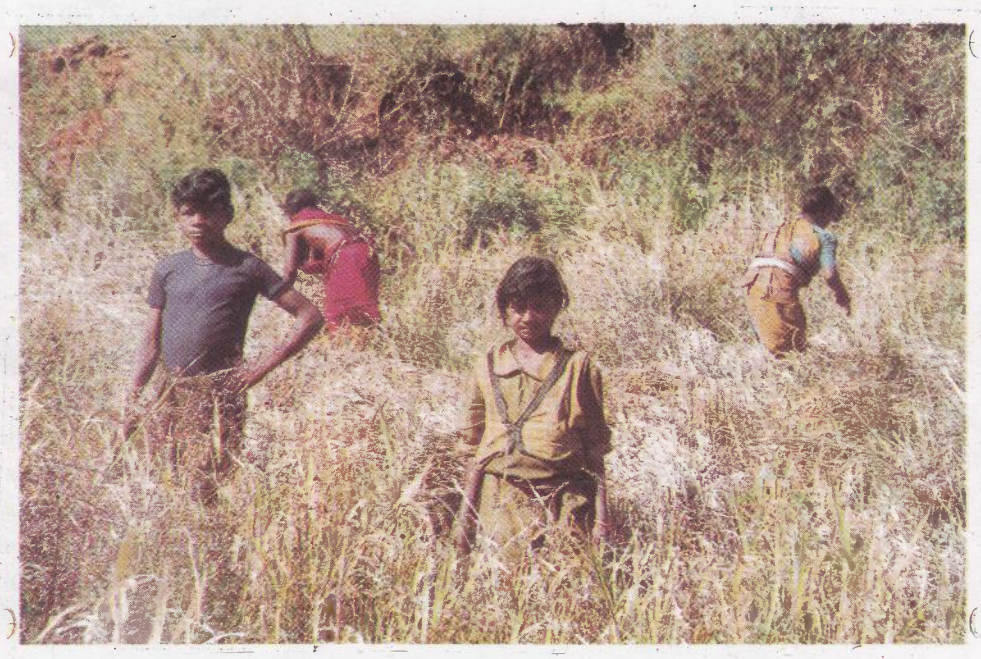
***Table-A***

| Sl. No. | District of North Orissa | Area affected in Sq. Miles / Hectores | Tribal communities practising shifting cultivation. | Approximate Population |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 1 | Keonjhar | 460 Sq. miles (119139.20 Hect.) | 1. Juang (PTG)<br>2. Bhuiyans | 8,000<br>20,000 |
| 2 | Sundargarh | 300 Sq. miles (77699.47 Hect.) | 1. Bhuiyans<br>2. Erenga Kolhas | 10,000<br>1,000 |
| 3 | Dhenkanal | 300 Sq. miles (25899.82 Hect.) | 1. Bhuiyans | 2,000 |
| 4 | Sambalpur | 410 Sq. miles (106189.27 Hect.) | 1. Kondha<br>2. Bhuiyan | 8,000<br>7,000 |
| | **Four Districts** | **1270 Sq. miles (328927.76 Hect.)** | **4. Tribal communities** | **56,000** |

**Analysis of Table 'A'**

- In the Northern Tract districts, such as Keonjhar, Sundargarh, Dhenkanal and Sambalpur having total area affected by shifting cultivation is 1270 Sq.miles or 328927.76 hectares.
- 4 (Four) tribal communities, such as the Juangs, Bhuiyans, Erenga Kolhas and Kondhs are practising shifting cultivation.

Podu field



Harvesting operation in Podu field.

- Among the above tribal communities, 2 tribal groups are known as Primitive Tribal Groups, i.e Juang and Bhuiyans (Paudi).
- 56,000 population from among the 4 tribal communities are involved in this age-old type of shifting cultivation.
- Bhuiyans (Paudis) are outnumbering the other 3(three) tribes totaling 39,000 Population and they are found in all the districts of northern tract regions.
- Erenga Kolhas of Sundargarh district having only 1000 population are the lowest, in so far as this practice is concerned.

***Table-B***

| Sl. No | Districts of South Orissa | Area affected in Sq. miles | Tribal communities practising shifting cultivation | Approximate population |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| 1 | Kalahandi | 2000 Sq. miles (517996.48 Hect.) | 1. Kondh<br>2. Kutia Kondh(PTG)<br>3. Kamars/Paharias<br>4. Bhunjia | 1,11,000<br>1,300<br>1,600<br>5,400 |
| 2 | Ganjam | 4,500 Sq. miles (1165492.00 Hect.) | 1. Kondh<br>2. Saoras<br>3. Jatapus | 2,06,000<br>95,000<br>600 |
| 3 | Koraput | 5,000 Sq. miles (1294991.20 Hect.) | 1. Kondhs<br>2. Saoras<br>3. Jatapus<br>4. Poraja<br>5. Gadabas<br>6. Koyas<br>7. Others | 1,76,000<br>52,500<br>15,200<br>1,45,700<br>34,300<br>28,000<br>3,500 |
| | **Three Districts** | **11,500 Sq. miles (2978479.68 Hect)** | **8 Tribal communities** | **8,76,900** |

**Analysis of Table'B'**

- Kalahandi, Ganjam and Koraput are the 3 (three) districts affected by shifting cultivation in the southern tract regions of Orissa.
- 11,500 Sq. miles or 2978479.68 hectares of lands are affected by shifting cultivation
- 8,76,900 population are practising this age-old type of cultivation in the above 3(three) districts.
- Tribal communities, like Kondh (Kutia), Kamars or Paharias, Bhumijas, Saoras (both Sudha & Lanjia), Jatapu, Porojas, Gadabas and Koyas practise shifting cultivation.
- Among these 8 tribal communities, Kondh (Kutia & Dongria), Saora (Sudha and Lanjia) are the Primitive tribal communities.
- Kondhs including Kutia and Dongria are outnumbering the other tribal communities of this tract totalling 4,94,300 population and they are found in all the 3(three) districts.

- Bhunijas of Kalahandi district having only 5,400 populations are the lowest.

Shifting cultivation and its spread in the Micro Project areas (data from Baseline Survey and Needs Assessment Action Plan undertaken by SCSTRTI., Bhubaneswar,

The data, collected from door to door survey in the Micro Project areas by the Sch.Caste & Sch.Tribes Research and Training Institute conducted in the September, 2001 provide a detailed picture of shifting cultivation, viz- extent of the area in hectares, the total nos of families dependant upon shifting cultivation and various crops cultivated in the shifting cultivation land. The survey conducted in the northern and southern tracts of the States provides a near accurate picture of the problem. The survey happens to be latest one. It shares the concept and logic of Dr. Mooney but uses improved gadgets and methods to get the facts from direct observation

*The total number of households, area under shifting cultivation, average size of shifting land per household and crops grown in the shifting lands are reflected in the Table below:*

***Table-C***

| Sl. No | Name of the Micro Project | Total no. of Households/ Total geographical area | No.of households dependent upon shifting cultivation | % of Households dependent upon shifting cultivation to total households | Approximate Area under shifting cultivation (in acre) | Average swidden land per house-hold | Crops grown in the swiddens |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | **A-Northern Plateau** Juang Development Agency,(JDA) Gonasika | 1496 / **641.44 Sq.Km.** | 1046 | 69.92% | 977.70 Ac | 0.93 Ac | Ragi, Mustard, Niger Black gram, Arharr |
| 2 | Paudi Bhuiyan Development Agency, Khuntagaon | 918/ **174.81 Sq.Km.** | 763 | 83.12% | 1580.95 Ac | 2.07 Ac | Blackgram, Mustard, Niger, Suan, Gulji, Gangei |
| 3 | Paudi Bhuiyan Development Agency, Jamardihi | 1192/ **188 Sq.Km.** | 842 | 70.64% | 524.40 Ac. | 0.62 Ac. | Ragi, Blackgram, Til, Mustard, Kandula, Jhudanga |
| 4 | Paudi Bhuiyan Development Agency, Rugudakudar | 851/ **108.79** | 202 | 23.74% | - | - | Blackgram, Redgram, Kandula, Jhudanga, Mustard. |
| 5 | Hill-Kharia-Mankirdia Development Agency, Jashipur | 561/ **129.78 Sq.Km.** | No household practice shifting cultivation | - | - | - | - |
| 6 | Lodha Development Agency, Moroda | 695/ **25.23 Sq.Km.** | No household practice | - | - | - | - |

| | | | shifting cultivation | | | | |
|---|---|---|---|---|---|---|---|
| | **Total** | **5713 household/ 1268.05 Sq.Km.** | **2853** | **49.94%** | **3083.05 Ac** | - | - |
| 7 | **B- Eastern Ghats** Bonda Development Agency, Mudulipada | 1493/ **130 Sq.Km.** | 1310 | 87.74% | 2443.22 Ac. | 1.87 Ac. | Blackgram, Mandia, Suan, Kangu, Kandula, Kankadakhi, Alsi, Jhudanga, Vegetables |
| 8 | Didayi Development Agency, Kudumulgumma | 1320/ **250 Sq.km.** | 1015 | 76.89% | 2638 Ac. | 3 Ac. | Mustard, Ragi, Nizer, Vegetables |
| 9 | Dongria Kondh Development Agency, Parseli | 551/ **50.35 Sq.km** | 545 | 98.91% | 1079.00 Ac. | 1.98 Ac. | Ragi, Kangu, Kosala, Kandula, Arharr, Pineapple, Mango, Banana, Lemon, Turmeric, Ginger. |
| 10 | Dongria Kondh Development Agency, Kurli | 1253/ **115 Sq.Km** | 1251 | 99.84% | 3887.14 Ac. | 3.11 Ac. | Ragi, Alsi, Til, Mustard, Kangu, Blackgram, Redgram, Kosala, Katingi, Ghantia, Orange, Lemon, Pineapple, Mango |
| 11 | Kutia Kondh Development Agency, Belghar | 1148/ **300 Sq.Km** | 1127 | 98.17% | 1581.25 Ac. | 1.40 Ac. | Ragi, Blackgram, Redgram, Nizer, Mustard, Alsi, Kandula, Jhudanga, Kosala, Janha, Kangu, Suan, Kulthi |
| 12 | Kutia Kondh Development Agency, Lanjigarh | 557/ **17..5 Sq.Km.** | 114 | 20.47% | 139.00Ac. | 1.22 Ac. | Ragi, Blackgram, Redgram, Nizer, Mustard, Alsi, Kandula, Jhudanga, Kosala, , Jowar, Janha, Kangu, Kulthi, Suan, Vegetables |
| 13 | Lanjia Saora Development Agency, Puttasing | 767/ **35 Sq.Km.** | 763 | 99.48% | 1171,00 Ac. | 2.00 Ac. | Ragi, Blackgram, Redgram, Niger, Kandula, Jhudanga, Suan,Janah |
| 14 | Lanjia Saora Development Agency, Serongo | 1241/ **30 Sq.Km.** | 1135 | 91.46% | 2120 Ac. | 2.00 Ac. | Ragi, Blackgram, Niger |
| 15 | Saora Development Agency, Chandragiri | 949/ **11.59 Sq.Km.** | No Household practice shifting cultivation | - | - | - | - |
| 16 | Saora (Thumba) Development Agency, Thumba | 850/ **11 Sq.Km.** | 421 | 49.53% | 412.10 Ac. | 0.98 Ac. | Ragi, Greengram, Blackgram, Arhar, Janha, kangu. |
| 17 | Chuktia Bhunjia Development Agency, | 561/ **150 Sq.Km** | No Household practice | - | - | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Sonabera | | shifting cultivation | | | | |
| Total | | 10690/ 1100.44 Sq.Km | 7681 | 71.85% | 15470.71 Ac. | 1.45 Ac. | |
| **Grand Total** | | **16403/2368 .49 Sq.Km. (585265.72 14 Acs.)** | **10534** | **64.22%** | **18553.76 Acs.** | **1.13 Ac.** | |

**Analysis of Table-'C'**

- The State of Orissa has 13 PTGs inhabiting in two geo-cultural zones. Among them PTGs, like Juang, Paudi Bhuiyan, Hill Kharia, Mankirdia, Birhor and Lodha inhabit in Northen Plateau and Bonda, Didayi, Dongria Kondh, Kutia Kondh, Lanjia Saora, Saora and Chuktia Bhunjia inhabit in the Eastern Ghat regions. For these 13 PTGs 17 Micro Projects are in operation now.
- Out of 6 PTGs inhabiting in Northern Plateau, Hill Kharia, Mankirdia, Birhor, and Lodha are not practising shifting cultivation, at present and Juang (69.92%) and Paudi Bhuiya (61.64%) of three Micro Projects are still depending on shifting cultivation.
- Among 8 tribes inhabiting the Eastern Ghats regions, except Chuktia Bhunjia others are depending largely on shifting cultivation.
- The percentage of dependency of tribes in Northern Plateau is 49.94 which is less than the percentage of dependency of tribes of the Eastern Ghats region (71.85%).
- The variety of crops grown in shifting lands of Northen plateau is 6 to 7 where as 15 to 16 varieties of crops and vegetables are grown in shifting plots of the Eastern Ghat regions.
- Out of 17 Micro Projects established in different PTG areas, 4 projects have little incidence of practice of shifting cultivation.
- A project wise comparison of data as dependency of shifting cultivation show that K.K.D.A., Lanjigarh has the lowest dependence ratio (20.47%) followed by 11 other Micro Projects and D.K.D.A., Kurli has the highest (99.84%) dependency ratio for shifting cultivation.
- The total approximate area under shifting cultivation as estimated in different Micro Projects is 18553.76 Ac.which is 3.17% of the total geographical area of all the Micro Projects ie. 585265.7214 Acs.
- Out of total 16403 PTG households, 10534 households (64.22%) depend upon shifting cultivation in different degrees.
- The man-days engaged in shifting cultivation vary from two months to six month in different areas.

**Remote Sensing Mapping of Shifting Cultivation an overview :**

The remote sensing survey mapping of shifting cultivation in the State shows the splash of data regarding horticultural spread of shifting cultivation. Covering 118 block areas, which are wholly, or partially practising shifting cultivation. The data is not corroborated by the field survey on the problem by SCSTRTI in 2001-02.

*The Remote Sensing Survey leading to mapping of the spread errs on the point that a ll sorts of deforestation caused by various others factors are attributed to shifting cultivation. Some of the districts, such as Mayurbhanj, Sambalpr, Bolangir are s hown u nder shifting cultivation spread, though, the tribes living in these districts are not habitual shifting cultivators.*

The reasons of depletion of forest cover in these areas are, therefore, to be attributed to other factors. The remote sensing mapping- never verifies fats at the grass-root to ascertain the factual realities. It is silent on the point as to who are the tribes practising shifting cultivation. One can come to the conclusion that the mapping showing spread of shifting cultivation is not full proof findings.

The data and the mapping of ORSAC could have been more systematic and reliable, had it been co-coordinated with on field survey to the effect on the basis of the report of the Working Group on Tribal Development, headed by Dr. Bhupinder Singh. A full proof survey of the spread of shifting cultivation can only be possible by land to land survey with joint efforts of revenue, forests and tribal Welfare Departments. This would go a long way to provide a clear picture of the situation vis-à-vis the development intervention implemented by Government and other agencies.

**Blocks of Different districts of Orissa affected by Shifting Cultivation (as per Remote Sensing Assessment)**

***Table-'D'***

| Sl. No. | Name of the District | Name of the Block | Total Area affected by Shifting cultivation (in Hect.) |
|---|---|---|---|
| 1 | Bolangir | Khaprakhole | 12.00 |
| | | Tarasingha | 489.80 |
| | | Tureikella | 609.60 |
| | | Saintala | 130.40 |
| | | Tentulikhunti | 102.60 |
| 2 | Dhenkanal | Kankadahad | 253.20 |
| | | Kamakhyanagar | 100.20 |
| | | Gondia | 97.40 |
| | | Dhenkanal | 472.60 |
| 3 | Angul | Pallahara | 757.60 |
| | | Angul | 1785.80 |
| | | Chhendipada | 243.20 |
| | | Athamalik | 116.00 |
| | | Kishorenagar | 959.40 |
| | | Talcher | 103.40 |
| | | Kaniha | 132.40 |
| 4 | Ganjam | Bhanjanagar | 1276.60 |
| | | Jagannath Prasad | 2854.00 |
| | | Buguda | 256.00 |

| | | | |
|---|---|---|---|
| | | Polsara | 159.50 |
| | | Kabisuryanagar | 11.80 |
| | | Aska | 521.40 |
| | | Belguntha | 244.60 |
| | | Sorada | 1686.20 |
| | | Sanakhumundi | 3068.00 |
| | | Kukudakhandi | 499.80 |
| | | Chikiti | 577.80 |
| | | Digapahandi | 1129.80 |
| 5 | * Gajapati | # Ramgiri-Udayagiri | 794.60 |
| | | # Mohana | 3,390.20 |
| | | # Nuagada | 552.40 |
| | | # Gumma | 427.00 |
| | | Kashinagar | 287.40 |
| | | Parlakhemundi | 3,842.80 |
| 6 | Nuapada | Komna | 434.00 |
| | | Khariar | 299.40 |
| | | Boran/Boden | 410.80 |
| 7 | ** Kalahandi | Gotmunda | 132.40 |
| | | Tunda | 189.60 |
| | | Madanpur-rampur | 1,404.40 |
| | | # Lanjigarh | 737.60 |
| | | Bhawanipatna | 223.60 |
| | | # Thuamul-rampur | 1,232.00 |
| | | Kalampur | 747.20 |
| | | Jaipatna | 80.40 |
| 8 | * Keonjhar | # Champua | 3,079.20 |
| | | # Banspal | 27,511.40 |
| | | # Keonjhar | 10,113.00 |
| | | # Telkoi | 5,286.00 |
| | | Harichandanpur | 2,999.00 |
| | | Hatadihi | 750.60 |
| 9 | * Mayurbhanj | # Kaptipada | 1,913.80 |
| | | # Udala | 384.00 |
| | | # Thakurmunda | 796.20 |
| | | # Jashipur | 1,313.20 |
| | | # Bangiriposi | 701.80 |
| | | # Samakhunta | 398.60 |
| | | # Sasarkona | 881.00 |
| | | # Bahalda | 439.60 |
| | | # Jamda | 277.20 |
| | | # Kusumi | 198.00 |
| 10 | * Koraput | # Pottangi | 2,165.30 |
| | | # Semiliguda | 2,073.80 |
| | | # Nandapur | 1,091.20 |
| | | # Lamtaput | 660.80 |
| | | # Boipariguda | 640.40 |
| | | # Kundra | 244.60 |
| | | # Jeypore | 196.20 |

| | | | |
|---|---|---|---|
| | | # Dasmanthapur | 768.80 |
| | | # Laxmipur | 1,557.40 |
| 11 | * Malkangiri | # Khaiarput | 1,030.80 |
| | | # Kudumulguma | 3,430.61 |
| | | # Korkunda | 873.60 |
| | | # Mathili | 278.00 |
| 12 | * Rayagada | # Rayagada | 2,302.40 |
| | | # Gunupur | 34.00 |
| | | # Padmapur | 24.00 |
| | | #Gudari | 653.80 |
| | | # Chandrapur | 493.80 |
| | | # Muniguda | 2,259.60 |
| | | # Bissam cuttack | 802.85 |
| | | Kalyansinghpur | 4,192.80 |
| | | Kashipur | 3,485.40 |
| 13 | * Khondmal | # Phiringia | 550.00 |
| | | # Baliguda | 1,163.00 |
| | | # Tumudibandha | 1,709.58 |
| | | # Kotgarh | 1,952.62 |
| | | # Daringibadi | 2,098.10 |
| | | # Raikia | 2,484.00 |
| | | #G.Udayagiri | 1,020.56 |
| | | # Tikabali | 565.88 |
| | | #Chakapad | 1,786.34 |
| | | #Nuagaon | 1,210.92 |
| | | #Phulbani | 683.60 |
| | | # Khajuripada | 1,115.40 |
| 14 | Boud | Harbhanga | 1,772.86 |
| | | Kantamal | 1,191.40 |
| | | Boud | 573.80 |
| 15 | ** Sambalpur | # Govindpur | 1,730.62 |
| | | # Kuchinda | 3,161.28 |
| | | # Jamankira | 10,433.46 |
| | | Naktideul | 4,835.90 |
| | | Rairakhele | 1,645.50 |
| | | Katirbaga | 1,526.34 |
| | | Jujumur | 2,111.02 |
| | | Maneswar | 1,404.40 |
| 16 | Bargarh | Ambabhana | 282.00 |
| | | Bhati | 800.80 |
| 17 | *Sundargarh | # Rajgangpur | 80.72 |
| | | # Panposh | 237.44 |
| | | #Gurundia | 4,401.88 |
| | | # Bonai | 376.70 |
| | | # Lahunipada | 2,120.00 |
| | | # Koira | 974.00 |

**** Tribal Sub-Plan (TSP) Districts.***

***** Part of district***

***# Tribal Sub-Plan (TSP) Blocks.***

**Analysis of Table 'D'**

- Out of 30 districts, 17 districts (56.66) of our State are affected by shifting cultivation.
- Out of 314 Blocks 118 blocks (36.3) of our State either fully or partly practising shifting cultivation.
- Ganjam is the only coastal district which comes under shifting cultivation zone.
- Out of 12 (twelve) Tribal Sub-Plan (TSP) districts, 10(ten) districts (83.33 percentage) are coming under shifting cultivation zones
- Out of 118 TSP blocks 62(sixty two blocks or 52.54) are under the coverage of shifting cultivation zone.
- The tribes of all the 13 blocks of Khandmal district practise-shifting cultivation.
- Except Banrpal block of Angul district, other 8(eight) blocks are involved in the practice of shifting cultivation in the non-Tribal Sub-Plan areas.
- Jamankira (10433.46 hects) and Keonjhar (10113.00 hects) are the most affected shifting cultivation blocks.

**Conclusion:**

- There is need for a paradigm shift in approach to face the problem of the eco-hostile practice of shifting cultivation by the tribal people in general and primitive tribes in particular.
- Efforts should be made to persuade shifting cultivators to takeup terrace cultivation where congenial ecological condition prevails.
- Development strategists and planners, should recommend to eschew the pernicious practice and to promote food security for the swiddeners.
- The tribal mindset for a dependable system of food security is to be developed and economically viable alternative strategies are to be formulated for them.
- Policy fluctuations in tribal development are to be avoided, as far as possible, in the context of shifting cultivation.

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# HEALTH SYSTEMS REFORM & THE ROLE OF NGOs: AN EVALUATIVE STUDY OF THE REPRODUCTIVE HEALTH EXPERIMENT IN TRIBAL REGION OF ORISSA

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**Introduction :**

Poverty, ill health and illiteracy are the major bottlenecks resulting in under development and over population in a nation. This not only results high morbidity due to poor pathological conditions, but also generates an underutilized surplus population, which do not contribute much to national productivity. In this scenario it is difficult to think of a healthy society of good physic and sound mind. The justifications for defining a population as fit and sound or having ill health are encapsulated both within the biological and socio-cultural framework of a society. Economists view health as social capital. They measure human life in terms of economic values and performance (Schultz, 1961). This is one of the reasons the Welfare State invest to improve the health status of its people. However, it has been observed that in spite of huge investment the health-seeking behavior of a society is largely influenced by customary caring practices and adherence to various traditional coping strategies, which have been evolved long ago. This is embedded in definite socio-cultural values, beliefs and systems of meanings attached to death and disease, pregnancy and child care (Van Bolen and Van Dormael, 1999). However, over the time the situation has changed and access into the reproductive health services is also influenced by the level of knowledge or awareness level of the population on the medical facilities, and on their affordable capacity. More particularly in tribal societies subjective perceptions about perceived health needs underlay people's own knowledge (Behura, 2000).

Access to reproductive health services is crucial in Orissan context because of its multiple ethnic composition and geographical diversities. In such situations child survival, contraceptive use and decline of consequent fertility are influenced by quality health services (UN,1994). However, utilization of reproductive health services is in turn related to the availability, socio-economic, demographic and cultural factors such as women's age, education, employment, caste and customary practices (Obermeyer, 1991; Elo, 1992; Acharya and Cleland, 2000).

**Objectives :**

- Firstly the paper endeavors to illuminate various dimensions of health reform policies in India.
- Secondly it provides a brief background of the KHOJ Project and throws some light on the socio-demographic profile of population in the project area.
- Thirdly the paper assesses the impact of various health services provided by KHOJ Project with special reference to Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR) of the project area.

- Fourthly the paper compares the mechanisms and the quality of health services delivered by KHOJ project and compares it with that of the Government Department.
- Lastly the paper critically examines the importance of community based approaches for the promotion of reproductive health, in the tribal regions of the State.

**Study Methods :**

The paper has followed both primary and secondary methods of data collection. In order to assess the impact of KHOJ Project on tribal people living in inaccessible tribal dominated regions the study has adopted both qualitative and quantitative methods. To explore the qualitative dimensions of health issues it has adopted Focus Group Discussions (FGD), key informant interviews, personal observations, etc. The annual reports of the KHOJ Project from 1994-95 to 1999-2000, hospital records and patient cards have also been reviewed. The study was conducted during January and February of 2001 in seven villages of both the operational Gram Panchayats i.e. Chahali and Pasara and again updated during in the year of 2003 when the project was closed down. The villages covered under the study are Lingrimunda, Gasamatia, Pajidanga, Sirum, Dhepasahi, Kambaguda and Gidriguda. The study villages are located at a distance of 1 to 27 kms. from Chahali the project head quarter.

## I

**Health Reform Policies and Reproductive Health :**

Understanding the magnitude of different health problems, different national and international bodies have been implementing various health related programmes. To mention a few of them are Primary Health Care, Comprehensive Health Care, Basic Health Services, Community Health Care etc. Besides this, in Indian context various commissions and committees like the Bhore Committee in 1966, the Srivastav Committee in 1975, the New Draft Health Plan of Government of India in 1977, the glorious Alma Ata Declaration in 1978 and "Health for All" by 2000 A.D. have substantially contributed in bringing a revolution while providing health services to all.

In order to provide the basic health needs of developing countries the "alternative health strategies" incorporated some of the components of 'Primary Health Care' approach, have emphasized the basic health services as the most peripheral echelon. In almost all the strategies emphasis have been made from 'curative to preventive' approach, from 'urban to rural', from 'privileged to under - privileged', and from 'vertical mass campaigns' to a system of 'integrated health services', forming a component of overall social and economic development (Newell: 1975). Still, the health policies so far adopted are yet to bring satisfactory results. However most of these programmes have been lacking in considering certain human factors like values, attitudes, motivation, commitment, etc.

In subsequent period inadequacies were observed and everybody felt the need of involving the grass-root community health workers and N.G.Os, in all health packages supported by W.H.O., U.N.I.C.E.F. multi and bilateral agencies. So the International Conference on 'Primary Health Care' held in September 1978 at 'Alma-Ata' has to emphasize on the unhygienic health condition of millions. Irrespective of the gap between the 'haves' and 'have-nots', the Alma Ata declaration called for a new approach to provide health care services. The objective behind has been to achieve more equitable distribution of health services and to attain a level of health status for all the citizens of the world, which would permit them to lead a socially and economically productive life (W.H.O. and U.N.I.C.E.F.: 1978). Again in 1979, the thirty-second World Health Assembly declared the International Conference on "Primary Health Care" and launched the global strategy which is popularly known as 'Health for All by the year 2000 A.D." It invited the member States of W.H.O. to formulate their national policies, strategies and plans of action to attain this goal and to act collectively in formulating regional and global strategies (W.H.O.: 1979).

UNICEF in its child survival programme has been giving a lot of efforts to improve the conditions for child survival. Among various strategies implemented by UNICEF 'GOBI' has significant impact which stands for Growth Monitoring; Oral re-hydration treatment of acute diarrhea; Breast feeding for good infant nutrition, protection against infection and immunization against the common communicable diseases during childhood. To achieve this, another strategy of 'FFF' i.e., Food, Family spacing and Female education has been adopted. Crucial to the above strategies is to make sure of social control of the health infrastructure through a high degree of community involvement. Following the agenda presented at the International conference on Population and Development at Cairo in September 1994, Govt. of India has started decentralizing health and family welfare programmes, and developing good quality services in a reproductive health approach.. Govt. of India has launched Reproductive and Child Health Programme in October 15,1997 which has incorporated services for the prevention and treatment of Reproductive Tract Infection (RTIs) and Sexually Transmitted Infection (STDs) as an integral part of Reproductive and Child Health (RCH) approach. As an approach it focuses on improving the quality of services provided by health system, and includes various packages for the management of reproductive health system. This approach place individuals and couples at the center of efforts to improve family health. In operational terms the reproductive health approach entails the service delivery mechanisms based on bottom-up planning and the client's needs; established standards for provision of quality reproductive health services through clients perspectives and accountability in the system; strengthens capacities for the management of decentralized programmes which ultimately aims at Right to information and transparency in public systems. However , there are certain critical constraints still operates in rural context seems to be more important for consideration. It has been commonly observed that the clients consider the quality of health services as poor for use, encountered by the negative attitude of the service providers, and very often it is also presumed that the rural people consider the quality of services as unaffordable.

Eye camp organized by ORRISSA at Brahmanpad PHC


Health treatment camp organized by ORRISSA

More than five decades of planning in our country to improve people's health is yet to yield satisfactory result to the tribal communities in particular, who have been explaining their ways of life in imaginary, spiritual or supernatural terms, not unlike the complex modern life, attributing to biological factors. Though the supernatural beliefs in the form of magic, religion implied by witch-doctors or sorcerers, quacks (medicine men), and the chanting of charms for *talisman* lies outside the range of scientific observation, still it prevails among the tribals. It is largely because expansion of modern health infrastructure during more than five decades have resulted in the medicalization of the entire treatment process which could not bring satisfactory result to villagers. Secondly, there are communities in both tribal and rural pockets, who have been strictly adhering to their ethno-method of disease treatments, largely based on the use of herbs, roots, barks, etc. is a part of their reproductive health system. Thirdly, there is ample potentiality within the community for their self-treatment of different type of diseases, which can be enriched keeping the reproductive health requirements of the population. By and large one finds that the use of herbs, leaves, roots, barks, juice and other herbal ingredients, known differently as folk or domestic medicine in different communities are more scientific by nature and have also been a part of tribal life.

**Voluntary Sector and Health Reform :**

The National Health Policy in 1983 called for expanding the coverage of services through the voluntary sector to improve access. As per the old data there are 7000 voluntary organisations covers a wide range of health activities to day in India (Mahal, 2000). They implement government health programmes, runs specialized community health programmes, deliver care and rehabilitation services for disadvantaged groups, sponsoring health care programmes for the challenged groups, and also engaged in applied health research (Mishra Chatterjee and Rao, 2003). As per an old data they share 10 per cent of the hospital and 13 per cent of the total bed strength of the country (Directory of Hospitals in India, 1987). The NCEAR survey on human development indicates (1994) the around 10.6 per cent of the total study villages represents the presence of some or other form of NGO with a state variations with highest presence in case of Maharastra (34.4%) and lowest in Uttar Pradesh (1.4%) (Ibid). The study of Mahal (2000) reveals that their presence has enhanced immunization rates upto an extent of 11 to 12 per cent. The World Bank study in 1990 concluded that the role of NGO in health sector was limited due to their fewer presence , low funds, bureaucratic rigidities, inadequate organizational and managerial capacities and inadequate organizational arrangements in the government to monitor NGO-government interaction (1995). In subsequent period the reform process has encouraged the involvement of voluntary agencies so as to deliver health services in a more speedier and qualitative manner.

**Health Scenario in Orissa :**

The ST composition in Orissan population share almost 22.13 per cent (2001 Census of India). Out of total geographical areas of the State 44.21 per cent of land area has been declared as Scheduled Area, which includes 6 districts declared as fully scheduled and 7 districts declared as partially scheduled. Of the

total 62 Scheduled Tribe communities, 13 communities have been declared as Primitive Tribal Groups (PTG). The Scheduled Areas of the State covers 118 (37.3%) Community Development Blocks (Statistical Abstract of Orissa 1991-92). The sex ratio in the State accounts to 971 females per 1000 males, where as among STs it is 1002. The Infant Mortality Rate (IMR) in the State of Orissa is 81.0 (India 67.6). Under five Mortality Rate (UFMR) in the State is 104.4 (India 94.9). Mothers' receiving at least one anti-natal checkup in Orissa is 79.5 (India 65.4), delivery in medical institutions in Orissa is 22.6 (India 33.6) and the deliveries assisted by a health professional in Orissa is 33.4 (India 42.3). The percentage of children aged 6 months to 36 months suffering from anemia in Orissa is 72.3 (India 74.3) and the percentage of children under 3 years of age suffering from under weight is 54.4 (India 47.0). The children with stunted growth in Orissa are 44.0 (India 45.7), and wasted children are 24.3 per cent (India 15.5). Percentage of women within the reproductive age group (15-49 years) falling with anemia in Orissa is 63.0 (India 51.8).

The health care facilities available in Orissa are much behind many States of India. This proves when one see that there are only 40 beds in Orissa per one lakh population is the lowest in India after undivided Madhya Pradesh. Again more than 95 percent of these beds are mainly located in urban and semi-urban areas. Private medical practitioners account for 31.39 per cent as regards out patients treatment in the State Public Hospitals, where as Primary Health Centers and public dispensaries account for 52 percent as regards out patient treatment in Orissa (Directorate of Health Services, Govt. of Orissa 2002).

The delivery of health care services in Orissa is basically consists of three tiers. The first tier at primary level consists of Primary Health Center (PHC) or new PHC at block level. This hospital having six beds is looked by single doctor, which cater a population of 30,000 in plain areas, and 20,000 in tribal hilly areas. The Sub-Center looks upon 5,000 population in plane areas and 3,000 in hilly tribal dominated areas. Paramedics like a female Multi Purpose Health Worker or Auxiliary Nurse Mid-wive (ANM) and a male Multi-Purpose Health Worker, who primarily provide productive health care services and family planning services, serve these centers. The upgraded PHC with 16 beds and two specialists, and CHC with 30 beds and six specialists respectively operates at block level to deliver health services are known as secondary tier. The PHC cover a population of 80,000 to 1,20,000. Besides, area hospitals located in semi-urban or urban centers of sub-division and district head quarters are also covered under this category. The tertiary health units consist of 3 medical college hospitals and 2 specialized hospitals, which provides supportive services to primary and secondary level health institutions.

## II

**Background of KHOJ Project :**

Health the unique resource is inextricably connected to the processes of human development. Five decades of health planning in India is yet to establish a sustainable system of basic health care facilities to the minimum level. Many opine

that it is basically due to its over centralization, over expensiveness and over professionalisation in approaches, methods of treatment etc. In fact this has forced the Non-Government Organisations to intervene in health service sector with an aim to achieve the target of Health for All by 2000 AD. This is the driving force that forced the Voluntary Health Association of India (thus known as VHAI), New Delhi, to evolve a strategy popularly known as KHOJ Project for providing out reach primary health care services interventions to the deprived sections living in inaccessible areas of the country. While largely promoting community health through an integrated approach the goal of the KHOJ Project is to improve the quality of life through socio-economic development of the communities. Development of health has been perceived in the KHOJ project is community specific, because it is largely intertwined with the management of natural resources that surrounds the community. KHOJ in Hindi literally means 'Search' which search for vulnerable and neglected areas and it is a search for proactive participatory solutions to the problems faced by particular communities with respect to identity and self-reliance. It aims to address the inequalities that currently exist in the health sector in India by developing sustainable innovative methods and strategies to combat community problems with health as an intervention point and as a means of facilitating overall community development.

In collaboration of the State level Voluntary Health Association (which in Orissa is popularly known as Orissa Voluntary Health Association, (thus known as OVHA) acts as the nodal agency) VHAI guides the local NGOs the implementing agencies of KHOJ Project in different States like Uttar Pradesh (Old), Madhya Pradesh (Old), Rajasthan, Orissa and also in few North - East States. Presently there are 18 number of KHOJ projects spread over different States of India are being monitored and guided by VHAI, New Delhi. The financial assistance to all these projects are provided from various donor agencies through VHAI, New Delhi.

**KHOJ Project in Orissa :**

Beginning of KHOJ Project in Orissa goes back to early part of 1994 when VHAI identified certain problematic and poor health zones in tribal Orissa. Finally Organization for Rural Reconstruction and Integrated Social Service Activities (ORRISSA) a NGO operating in Kondhamal district have been entrusted to start one KHOJ Project in one of the most inaccessible tribal dominated underdeveloped pockets of Khandamal district of Orissa. The first phase of KHOJ Project was started with the funding support from EZE Germany in 27 villages and habitations of Chahali Gram Panchayat in Chakapad block of Khandamal district. The second KHOJ Project in Orissa has been started during 1997 in Similipal region of Jashipur block Mayurbhanja district is being implemented by CREFTDA a local NGO.

The long term objectives of the KHOJ Project l is to reduce Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR); to help the community to raise their standard of living by developing sustainable livelihood securities; and to ensure disease free reproductive life to the community. The short-term objectives of the KHOJ Project are to build a participatory health system; to ensure maternal and child health care; to enhance the capacity of the women; to promote education for curative and preventive measures against health hazards; to develop micro-economic

enterprises; and to explore local natural resources for sustainable livelihood security including strengthening of government development programmes.

**Profile of Project Area and the Communities :**

A baseline socio-economic survey was conducted in the project villages during 1994-95 with the help of an outside agency. The study aimed to understand the dynamics of the society, culture and the state of social development in the project area; to analyse the economic status, level of skill of the people, their occupational structures and infrastructure development in the area; to identify health related issues of mothers and children; to understand available health care system in the area; to explore the possibilities of interventions, and to evolve strategies to carryout the interventions.

The KHOJ Project was initially started in one Gram Panchayat named as Chahali which is 56 kms. away from Kondhamal the district headquarter. The project area is located on the extreme south of Chakapad block and is adjacent to the district of Ganjam. The rugged plateaus and hill terrains of the project area are situated at a height varying from 300 to 1100 meters above the sea level. The climate of the project area is similar to that of Deccan region. The average rainfall of the area is 1591 mm with 77 rainy days (Statistical Abstract of the District, 2000). The project area consists of 23 revenue villages and covers a total of 829 households of which 497 HHs are belonging to different Scheduled Tribe communities. The project area has one Muslim household, 27 Christian households and 52 households belonging to general caste groups. The details of certain socio-economic features of the population are given in ***Table –1***.

The statistics maintained by Integrated Child Development Scheme (ICDS) reflects that the IMR in the project area was 287 per 1000 compared to 98 per 1000 in the State. The normal age of marriage for many women ranges between 16 to20 (63.2%), while 73.0 per cent of women had their first pregnancy at the age of below 20 years. Out of 2599 birth recalled by the people 410 cases are declared as still birth. About 32.0 per cent of women have their second pregnancy within two years of first pregnancy. Thus, the project area epitomises an acute poverty, ill health, high illiteracy and many other multiple backward dimensions.

During the survey it was observed that Chahali and Pasara Gram Panchayats had all the characteristics of remoteness, difficult to access hilly tribal pockets. Both the Panchayats were suffering from object distress conditions induced by shortage of food, lack of minimum health services, absence of functional development and extension services, very poor literacy and awareness regarding personal hygiene, sanitation, child care and rights, crippling with influence of exploitative forces like quacks, moneylenders and so on. With primitive agriculture most of the families in the project area had to experience shortage of food for 8 to 4 months in a year. Lack of cash economy siphons a substantial proportion of food grains used to be exchanged by the people to get cash or items for day to day living. Availability of various infrastructures in the area was almost nonexistent. The health facilities (including PHC at Chahali) were defunct mainly due to high staff turn over and absence due to their reluctant

attitude to stay in the interior pocket. As a result, one finds high frequency of malaria, dysentery, diarrhea, maternal and infant mortality, general morbidity etc, which result loss of work/wage, indebtedness and anemic conditions. Poor awareness on personal hygiene and sanitation, irregular functioning of health facilities, along with the high influence of quacks seems to be major bottlenecks in the process of change. The poor health situation of the area as surveyed by the project reflects from ***Table – 2***.

During 1997-98 the operational area of the KHOJ Project has been extended to one more adjacent gram panchayat named as "Pasara". A similar baseline survey in new project area was also carried out. The finding reveals that there are a total of 4678 population in the entire G.P have been distributed over 1065 households of which 68.54 per cents are belonging to Scheduled Tribe communities (KHOJ Project: 1977-78). The literacy level of the new project area is 32.43 per cent while the illiteracy among the women groups is 68.67 per cent. The IMR of the new Gram Panchayat is around 135 per one thousand children, while almost 75 per cent deliveries have conducted by local untrained hands. Thus, the KHOJ Project covers a total of 8348 households in all the villages of Chahali and Pasara Gram Panchayat in Chakapad block of Kandhamal one of the most backward districts of Orissa. A brief disease profile of the KHOJ project area surveyed during pre-project period can be observed from ***Table – 2***.

## III

This section of the paper deals with various major activities of KHOJ Project and their impact, which have been implemented in the project area at different points of time. For the purpose the study has basically reviewed all six annual reports of the KHOJ Project beginning from the year 1994-95 to 1999-2000. To assess various project activities and their impact on the villagers the hospital records have been reviewed and people's opinion has been collected through focus group discussions. All the activities implemented in the project area can broadly be categorized as (a) Community Organization, (b) Reproductive Health programme and (C) strengthening of community economy.

**Community Organisation :**

Importance of community organization for successful implementation of Project activities seems to have well understood by the project authorities. They believe that preparation of the community for acceptance of technological inputs is the basic requirement for sustainable development. With this premise the project authorities have formed Village Development Committees (thus known as VDC) and Mahila Mandals (thus known as MM) in each project adopted village. It has been envisaged that the VDC and MM will be the appropriate channels in the villages for effective implementation of programmes, and also in carrying them forward. At present there are 32 VDCs and 24 MMs are reported as operational in the project villages. The members of the VDCs and MMs have provided with sufficient training and motivation input for their involvement/participation in all village level activities of the project. Since the objective of forming VDC and MM is to empower the people, in later period all the programmes of the KHOJ project

have been designed and implemented through the members of these communities based organizations. The project staff have always played the role of facilitator while providing and provided various technical and non-technical inputs to the members.

The participation of the members of the VDC and MM in the project activities is ensured through village meetings, workshops and sharing of their views on project activities. They are playing a major role in the selection of beneficiaries for micro-economic activities, formation of village school health and education committees, participating in national pulse polio, other immunization programmes of the Government and in assessing the performance of the village health animators-cum-non-formal facilitators and of the Traditional Birth Attendents (TBAs). Intensive meetings and interactions among the villagers and the KHOJ volunteers have resulted in overcoming failures in most of the programmes undertaken by the project during the years. The most important achievement of the community organization in the project is the mobilization of peoples' support to establish a weekly market, one sub-post office at village Nidhiaberna, repair of 8 kms. road from Jilaghati to Nidhiaberna, establish one oil-processing unit at Sunapanga, and taking over of the management responsibilities of the distribution of mid - day meal in Sevashrama school of Gistikhol village. Since all the Mahila Mandals in the project areas have been registered with the ADM of Kandhamal district, under Societies Registration Act of 1860, now they are able to receive financial assistance under various development schemes from both government and non-government sources. Around 267 members of different Mahila Mandals have been motivated to take up saving scheme under the Mahila Sambrudhi Yojana.

As a part of the community organization process another package programme has been adopted in project villages to strengthen Panchayati Raj Institutions in which all Ward Members, Sarpanchs, Samiti Sabhyas, and representatives of VDCs and MMs have been provided training/orientation on the provisions of new Panchayati Raj Act and the role and responsibilities. The members of VDCs and MMs are much helpful in motivating and explaining the villagers regarding the formation of Gram Sabha. Such community organizations at village level are primarily facilitating in organizing mobile health camps, immunization camps, ANC and PNC check ups, and running NFE centres in project villages.

It has been observed that over the time the community mobilization processes have successfully widened the functional need and operational areas of the VDCs and MMs even beyond the project requirements. The opening of weekly market at Nidhiaberena gave opportunity to the people of thirteen villages who now directly trade local produces. This has minimized the opportunities of the middlemen to exploit the poor tribal people. Again the functioning of a rice and oil mill at Sunapanga have brought a profit of Rs.5000/- during its' first year which has been placed in the village fund. The villagers of Ragapadu have successfully motivated the local Government authorities in mobilizing support for one dug well in the village. The people of Chahali Gram Panchayat went under relay hunger strike in the Office of the District Collector, Kandhamal during

1998-99, which brought immediate measures to fulfill their basic demand of stretching road communication to their village.

**Reproductive Health Programme :**

In the remote villages the KHOJ Project has established a three tier reproductive health care delivery system. They are viz: outdoor and indoor services delivered from its' Mini Hospital operating from own hospital building located at Chahali, Mobile Health Camps and Mass Health Camps. Apart from, ANMs and Health Promoters' also manage two Satellite Sub-Centers of the KHOJ Project. At different contact points the project also offer services to the villagers. These Satellite Sub-Centers are supported by the project Mini Hospital. The health programme gives more importance to the problem of health hazards faced by the communities. The reproductive health services provided by the project are of both preventive and curative by nature (***Table – 3***).

**Reproductive Health Education :**

The reproductive health programmes of the KHOJ Project have started with health education campaigns like: school health programme for the students in Non-Formal Education (NFE) Centers; regular disinfecting measures to clean tube wells, dug wells, maintenance of village sanitation by cleaning stagnant water; developing proper drainage, bleaching the contaminated water, repairing of the defunct tube wells and constructing the damaged platforms; undertaking mobile health camps, popularizing wall paintings and organizing cultural programmes which have sensitised the community on the prevention of malaria, anemia, general hygiene, malnutrition, immunization, diarrhea, skin disease, dysentery, pneumonia, use of breast feeding etc.

**Referal Services :**

The primary aim of the project is to provide Anti-Natal Care (ANC), Post-Natal Care (PNC) to mothers and children; however, many times it became difficult for the project authorities to handle all complicated cases because of lack of infrastructural facilities. Under the situation, it is mandatory for the project to provide Referral Services by transporting them to the nearby hospitals functioning at Tikabali, Phulbani and Bhanjanagar.

The project in order to meet the requirement of the women and children also provides value-added services. The doctors and ANMs of the project extend their services for the nursing mothers and children through weekly anti-natal check ups. The delivery of primary health care packages of the KHOJ Project include out-door services at health centers, out reach health care through rotational mobile health camps, immunization camps, ANC and PNC care, monitoring of malnutrition cases (below 6 years of age), school health camps and continued health education packages with clinical facilities. The involvement of KHOJ Project in ensuring the delivery of primary health care to the people living in these isolated Gram Panchayats have sufficiently influenced the district health

administration to undertake special health programmes like Swasthya Melas and Eye Camps in project villages in collaboration with the project.

**Mini Hospital :**

The KHOJ Project from the beginning has been providing regular outdoor services for the patients at Chahali the project headquarter. During 1997-98 such services are provided from its own hospital building, which is made possible through generous contribution of land by the federation of VDC and MMs. The hospital building of the KHOJ Project also provides indoor services for two patients simultaneously and labors room facility. A team comprising of a Doctor, one Pharmacist, two ANMs and a Laboratory Technician runs the Mini Hospital. Major services provided from the mini Hospital to the villagers can be categorized as:, Pathological Facility, Indoor Facility, Ayurvedic Treatment and Referral Services.

**Pathological Facilities :**

Under the surveillance and radical treatment regular blood slides are collected at health centers, as well as by health promoters during field visits from suspected malaria patients and slide tests are made to assert the PV, PF and negative cases. Apart from, the project hospital also provides services by undertaking blood DC, hemoglobin and urine test. The project up till March 2000 has collected 6036 blood slides of which 4603 slides have been reported as active. Of them 1868 cases have been reported as parasite positive who were given radical treatment. Similarly, 1862 D.C. tests have been carried out during the time. It has been observed that over the times the villagers have developed positive attitude to avail pathological services from the project hospital even in payment of nominal charges.

**Indoor Facility :**

The Mini Hospital at Chahali has been rendering indoor facilities to the patients. It has been observed that by March 2000 a total of 62 patients including pregnant mothers have been admitted for indoor treatment, of which 19 cases have been referred to hospitals at Tikabali, Bhanjanagar and Phulbani. The villagers told that the indoor facilities at the project hospital provide emergency services to the complicated cases. Since the project has established a decentralized health service delivery so minor and non-complicated cases are treated in the village.

**Ayurvedic Treatment :**

The project area is reach in botanical resources. For long people have been collecting various medicinal items from their surrounding forest. Understanding this the project authorities along with the local medicine men made a survey of such trees documented the available ingredients and their method of processing. The project has developed a herbal garden by planting 68 varieties of medicinal plants in its hospital campus. Eleven varieties of medicines are produced by the

project at its Mini Hospital by using locally available plants and other natural resources. These medicines are produced keeping in mind the minor ailments, which have been frequently reported in the locality. The Chahali out - door started dispensing these medicines to the patients. The project has also produced a booklet in Oriya on the usefulness of medicinal plants in popularising the specific practices of herbal medicines. In doing this project has reinforced the belief, use and practices of herbal medicines among the villagers.

**Mother and Child Health (MCH) :**

The project gives more emphasis on the mother and child health (thus known as MCH) components of the primary health care services. The ANM who is in charge of regular visit to the villages conducts regular checkups of all the registered anti-natal cases (thus known as ANC) and post natal cases (thus known as PNC), provides support to the Traditional Birth Attendants (thus known as TBA), and also attends labor cases. Up till March 2000 a total of 687 ANC cases have been registered, out of which only 14 cases have been reported to be miscarriage, 8 cases carrying still births and others as successful deliveries. The mothers in the project area have been given 3 trimester checkups, TT doses and a course of iron folic tablets. The villagers because of their traditional beliefs were not giving much importance on the MCH practices. The roles of TBAs in this regard were of little use because TBAs were also traditionally informed and had no scope to modernize their knowledge base. However the project has generated immense impact on the women folk on various aspect of MCH.

**Immunization :**

Orissa tops the IMR and MMR lists with 98 per 1000 and 38 per 1.00 lakh live births respectively. Vaccination plays an important role in curbing IMR. In order to minimize the IMR and to monitor the child birth/growth rate, the KHOJ project has organized regular immunization camps for nursing babies. To cover all the babies of the project area under the programme is not an easy task because the project villages are scattered and isolative. It has been experienced that cultural factors like beliefs, practices etc negatively influences the attitude of the mothers towards the adoption of medicines. However, the sincere and persistent effort of the project staff have convinced people and mobilized them to attend the camps in larger numbers. The completion of immunization dozes for both DPT and polio clearly reflects the attitudinal changes among the people towards the adoption of medicines in time. A total of 16 such camps have been organized where 1035 cases have been immunized by the project. In initial days the participants in such camps were very less. However, in later years due to multi–pronged approach of the project the participation of the villagers has increased and now many of them volunteer for the purpose.

**Training of Traditional Birth Attendant :**

It was observed that the Traditional Birth Attendants thus as known as TBA) in the villages play very important role in the ANC and PNC of mothers. These TBAs have long experience of work in their own communities. In order to

upgrade their traditional skill and to make it more scientific the project had planned to provide orientation training to all TBAs of the area. Accordingly, 26 TBAs have been given six days training in two phases on various aspects of reproductive health care like safe delivery process, immunization, nutrition etc. In later period it was observed that due to training a lot of changes have been observed in the traditional practices followed by TBAs, For example now they have started using new blade to cut the naval cud of the baby and prescribing certain pre – and - post-natal care for both mother and the child. Since the TBAs are more or less old in age so initially the training inputs provided to them were not internalised for practice. However, constant follow up provided by Health Promoters, and ANMs have made them successful adopters of modern ideas. Many of them now acting as change agents in the village.

**Out-Reach Health Care :**

The Out-reach health care services are another important components of the KHOJ Project which aims to spread the message i.e. "health is wealth" among the people. This programme has been undertaken by the project on the premise that the villages in this region are located in interior pockets and the education as well as the awareness levels of the villagers is also at very low. These are the major reasons for which the people might not turn regularly to the mini hospital at Chahali. It was proposed that out-reach health care programmes can tape such groups and provide them various health services. The out-reach health care services provided by the project in villages include various programmes like Mobile Health Camps, Mass Health Camps, Satellite First Aid Centers and School Health Camps. Some of the above camps seem to be similar, but they vary in their approach, target groups, frequency etc. Similarly the impact of health interventions made by KHOJ Project can be viewed quantitatively from ***Table – 4***.

**Mobile Health Camps :**

The curative services of KHOJ Project incorporated the programme of conducting Mobile Health Check-up camps in the project villages, which takes health services to the doorstep in many interior villages. It primarily aims at popularizing the scientific ways of controlling health hazards among the people, which acts as a platform to generate health awareness among, people. The mobile health team consisting of the Doctor and ANM are who basically work with the assistance of local health promoters and TBAs. Apart from health care services, such camps have also provided awareness programmes specific to disease, displayed communication materials and cultural shows. These mobile camps also act as the refresher course for the health workers and for the TBAs. A total of 162 mobile health camps have been organized in project villages up till March 2000, which have treated 3689 patients. Mobilizing the villagers to these camps in initial days was a hard task however; VDC, and MM played a major role in convincing the villagers to attend such camps in large numbers.

**Mass Health Camps :**

These health camps have been regularly organized on every quarter to provide specialized medical care to the patients in their villages. This is the extension of the referral services for many of the patients having chronic and complicated health problems, but they do not normally go to hospitals even they are referred by the health workers. The VDC and MM play active role in mobilizing genuine patients to attend these camps. The Health Promoters during their normal visits and TBAs during their regular interaction in villages identifies cases and links them to such camps. The implementation of this programme over the years has successfully proved the efficacy of the Health Information System (HIS) established by KHOJ ORRISSA. A total of 177 such camps have been organized during the project period, which have treated 4736 patients. Establishment of HIS not only chennalised the information on health related problems upward from the households, but also helps to establish a decentralized flow of health information from project to villages and vice versa.

**Satellite First Aid Centers :**

In spite of the health services provided from mini hospital and through mobile health camps, it was observed that quite good number of sicks are left in villages. . After the completion of first year of the project it was thought by the project that Health Promoters stationed at cluster level who cover an operational area of 3 to 4 villages during their regular visit can attend these patients. However, it has been observed that by the end of March 1999-2000 around 9000 patients have been treated by the Health Promoters for first aid services. Since Health promoters have closer and frequent links with the villagers it was commonly observed that during urgency the villagers move to them without hesitation even during night. At certain level it reflects the confidence of the villages on the health services provided by the Health promoters.

**School Health Camp :**

The KHOJ Project considers health as an integrated tool, which can only be implemented through a package of programmes. It was planned to implement health camps in all the Primary, ME and High Schools of both the Panchayat. Apart from physical treatment, school children have been given educational programmes on various aspects of physical treatment of diseases like cough, cold, dysentery, fever, etc. In total 131-school health camps have been organized in the project areas on rotational basis, which have treated 2162 student patients.

The project authorities have considered Reproductive Health not merely as a concept rather it is an integrated and interdependent approach of various human sub-systems. This has been rightly understood and implemented by the KHOJ project. The project level VDCs and MMs have rightly adopted economic development as one of the sub-systems of the community from the health perspective. The initial objective for the project authorities was to form credit and thrift groups through regular contributions, however, ultimately the project helped the community, to become free from *sahookars* and patty vendors. The members

of these community funds have established transactions with SBI Chakapad and NABARD for productive investment. Apart from, the KHOJ project has established certain productive and income generating units in the project areas. A few of them includes one oil and paddy processing unit which is in operation since 1996-97; goatery, poultry and piggery units; purchase and distribution of agro-implements for individual use; value addition of various NTFPs and SAPs, and horticultural produces; establishment of a marketing network through peoples organization etc. The basic objectives behind is multiple by nature. The project wanted the community to be self sufficient in livelihood earning, thereby establishing their market linkages, and in enriching the nutrition value in the daily intake of the villagers. By this the villagers not only made scientific use of the natural resources available surrounding them, but also helped to upgrade the knowledge of the population in the project villages. The ***Table - 5*** gives a brief account of the achievements of major Income Generation Programmes (IGPs) and Nutrition activities so far implemented in the KHOJ Project areas.

**Conclusion :**

Early to the implementation of the project in these isolated pocket, the routine service delivery mechanisms have never met the basic health needs of the masses largely because the Health Department has never thought tribal people as economically potential. As a result, the health services available were of poor quality. There were little correlation between the timely health-related needs of the people in the villages and the delivery of government health programmes more particularly for the women and children. As a result, frequent disabilities endemic illness, and premature death of the people were taking place. Poverty and starvation, homelessness, unemployment, illiteracy and injustice within and outside the community supplemented such situations. Now a days one finds the curtailment of funding has affected both the structural and functional or operational efficiency of the Health institutions in the rural levels. In the globalization process the villagers particularly the tribals are the most sufferers. Since the basic income level of these sections have not gone up so they are suffering a lot to meet the price rise in food and other basic requirements. As result, the tribal people in particular are not able to access the specialized health services. In such situations health service delivery approaches, strategies and quality of services should be different and may be similar to that of the experiment made in the KHOJ project.

Looking at the huge population size and resource constraints it is difficult to visualize a holistic development of Indian society. The low per capita income, low literacy and acute poverty have kept a major chunk of Indian population always much below the human living. In this process the ethnic minorities like Scheduled Tribes, Scheduled Castes, and Muslims etc. are the most sufferers. In such situation the tribal communities' in particular and rural people in general feel safe to keep faith on their traditional systems, which by and large influence the living style of the people. Efforts are to be made to generate and strengthen indigenous resources, which will be sustainable in the long run.

The experiment justifies that reproductive health of a community at micro-level has to be visualized from the perspective of time and space. Health as a major

component of human life system cannot ignore other sub systems like economy and culture. It also establishes that successful implementation of reproductive health project in tribal areas many time has to be participatory by nature, and should be based on the revival of natural resources.

The KHOJ experiment shows that a wide range of socio-cultural and economic institutions at local level is to be reoriented and collaborations should be made among them at operational level. Such a strategy would help the deprived and long neglected tribal societies to have access into the services and to became powerful agents of change.

The project substantially established that all attempts should be made to establish embryonic health information system, which will integrate all activities at village level. This will widen the service delivery mechanisms and would result better inter-sectoral collaboration. This will also establish and strengthen the referral structures at local level.

As regards the NGO participation in the implementation of reproductive health programmes the experiment established that committed NGOs working with marginalised communities can only understand peoples' need much better than Government Institutions operating in tribal areas. Since NGOs are involved with the people and in their problems deeply, they can suggest innovative and practical ways and means to bring about a change within these communities. Some of these NGOs while experiment such projects do develop their capacity to become a partner with Government Health Department for smooth implementation of various programmes of reproductive health packages particularly in backward tribal dominated areas.

Another dimension established through this experiment is that Government many times tries to optimize the goals with the framework of its concerns, but fails to consider the system as a whole. However, looking at the budget constraints the implementing agencies including NGO should complement each other because more or less they overlap the territories, objectives and time frames and should not duplicate the operation with limited resources.

The process of alternative institutional arrangements requires adoption of flexible mechanisms so as to establish a decentralized need-based reproductive health system. This process demands the consultation with larger number of people and groups during situation analysis made by the implementing agencies. This would generate good will and a sense of belonging among different stakeholders.

The KHOJ experiment suggests that the RCH programme need interventions for the development of social sector which includes women's development; adolescent education and counseling, adolescent and youth reproductive and sexual health education; prevention of gender based violence, nutrition, safe drinking water, good hygiene are to be included, etc. These interventions for social change need to be planned and accordingly implemented by taking into account the ground realities. Lastly it can be concluded that the KHOJ experiment has established the participatory Reproductive Health service

delivery as one of the methodological tools that enables the stakeholders to measure and improve the quality of health of the community.

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*Table – 1*

**Distribution of socio-Economic characteristics of the project area**

| | | |
|---|---|---|
| Total population | - | 3599 |
| Literacy level of the area | - | 40.19% |
| Literacy level: | | |
| Tribal males | - | 13.00% |
| Tribal females | - | 8.00% |
| Occupations of the area: | | |
| Cultivation | - | 49.7% |
| Wage labour | - | 25.10% |
| Trade & business | - | 30.20% |
| Suffering from diseases: | | |
| Anemia | - | 39.5% |
| Diarrhea | - | 31.4% |
| Malaria | - | 30.7% |
| Causes of infant mortality: | | |
| Diarrhea | - | 39.3% |
| Malaria | - | 36.8% |
| Fever | - | 24.8% |

*Source* - Organisation for Rural Reconstruction and Integrated Social Service Activities (ORRISSA) *Office Records, 2001*

*Table - 2*

**Distribution of Disease Profile in the project area during pre-project period**

| Sl. No. | Indicators | Status (in Percentage) |
|---|---|---|
| 01 | Malaria | 30.7 |
| 02 | Stomach disorder | 5.3 |
| 03 | Cough | 3.1 |
| 04 | Asthma | 0.8 |
| 05 | T.B | 0.6 |
| Child Birth and Mortality Rate | | |
| 01 | Average number of pregnancy per women | 03 |
| 02 | Still Birth (%) | 11 |
| 03 | Death Below 5 years (%) | 19 |
| Case of Infant Mortality | | |
| 01 | IMR in the area (per 1000) | 140 |
| 02 | Diarrhoea (%) | 19.3 |
| 03 | Malaria (%) | 36.8 |
| 04 | Malnourishment (%) | 6.8 |
| 05 | Fever (%) | 46.2 |
| 06 | Multiple disease (%) | 2.9 |
| Gap between Pregnancies. | | |
| 01 | 0-1 yrs (%) | 9.4 |
| 02 | 1-2 yrs (%) | 22.2 |
| 03 | 2-3 yrs (%) | 21.1 |
| 04 | Women adopted family planning measures (%) | 9.9 |
| Age at Marriage (%) | | |
| 01 | 10-15 yrs | 20.6 |
| 02 | 16-20 yrs | 63.2 |
| 03 | 21-25 yrs | 12.6 |
| 04 | 26-30 yrs | 3.0 |
| 05 | 30+ yrs | 0.9 |

*Source: ' Swathya Samikhya' A Base Line Study undertaken for ORRISSA by Regional Centre for Development Co-Operation, 1995.*

*Table - 3*

**Distribution of treatment of cases according to different diseases treated by the KHOJ Project in different years.**

| Sl. No | Diseases | 95-96 | 96-97 | 97-98 | 98-99 | 99-2000 | Total |
|---|---|---|---|---|---|---|---|
| 1 | Malaria | 541 | 1000 | 308 | 1326 | 1364 | 4539 |
| 2 | Diarrhea | 208 | 624 | 672 | 1698 | 720 | 3922 |
| 3 | Dysentery | 68 | 178 | 210 | 116 | 835 | 1407 |
| 4 | Anemia | 120 | 89 | 161 | 102 | 466 | 938 |
| 5 | Cold Fever | 913 | 1510 | 1594 | 4165 | 4790 | 12972 |
| 6 | Skin Problem | 40 | 184 | 447 | 1008 | 847 | 2516 |
| 7 | Pain | 177 | 510 | 574 | 1159 | 1259 | 3679 |
| 8 | Stomach Problem | 74 | 309 | 485 | 739 | 783 | 2390 |
| 9 | Eye-Ear Problem | 43 | 399 | 429 | 626 | 480 | 1977 |
| 10 | Gynecological | 352 | 75 | 126 | 240 | 217 | 1010 |
| 11 | Malnutrition | - | 352 | 29 | 45 | 35 | 461 |
| 12 | Others | 1252 | 614 | 444 | 3156 | 3666 | 9132 |
| | Total | 3788 | 5844 | 5459 | 14380 | 15462 | 44933 |

*Source – Annual Reports of concerned years of KHOJ Project, ORRISSA.*

*Table - 4*

**Distribution of achievements of Mobile Health Camps and Treatment of cases in the Khoj Project Villages in different years.**

| Sl. No | Type of Mobile Health Camps | No. of Camps and Patients Treated in different years. | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1994-95 Nos/ Cases | 95-96 Nos/ Cases | 96-97 Nos/ Cases | 97-98 Nos/ Cases | 98-99 Nos/ Cases | 99-2000 Nos/ Cases |
| 1 | Village Mass Health Camp | 16 590 | 42 1008 | 21 728 | 28 616 | 39 977 | 31 817 |
| 2 | School Health Camp | - | 25 250 | 22 120 | 23 564 | 26 520 | 35 708 |
| 3 | NFE Health Camp | - | 54 350 | 46 230 | 17 348 | 31 465 | 42 840 |
| 4- | Immunization Camp | - | 05 230 | 3 160 | 2 185 | 3 268 | 3 192 |
| 5- | Eye Camp | - | 02 96 | 1 62 | 2 69 | 1 48 | 2 63 |
| 6- | Mother TT Camp | - | 9 31 | 7 42 | 29 397 | 22 550 | 31 775 |
| | Total | 16 590 | 137 1965 | 100 1342 | 101 2179 | 133 2828 | 144 3395 |

*Source – Annual Reports of concerned years of KHOJ Project, ORRISSA.*

*Table – 5*

**Impact of Health Interventions made in the KHOJ Project area of Kondhamal District**

| Indicators | Base year – 1994 | Achievements current year – 2001 |
|---|---|---|
| Target Group | | |
| No of villages | 14 | 27 |
| Population | - | 10,000 |
| Health | | |
| (a) Morbidity (% of total cases) | | |
| ARI | 03.65 | 02.6 |
| Malaria | 28.46 | 08.28 |
| (b) Morbidity (% to total death) | | |
| Death due to Diarrhea | 13.92 | 04. 88 |
| Death due to Malaria | 40 | 02.00 |
| Maternal Death | 15 | 03.00 |
| Infant Death (IMR) (Per 1000) | 140 | 110 |
| Maternal and Child Health (%) | | |
| Complete ANC coverage | NA | 80 |
| TT Immunization | 69 | 95 |
| Primary Immunization coverage | - | 96 |
| Registration in first Trimester | NA | 77.6 |
| Deliveries/Births | 35 | 83 |
| (d) Birth Registration (in %) | | |
| By ANMs | - | 51.00 |
| By TBAs | - | 41.00 |
| By Neighbours | - | 8.00 |
| (e) Laboratory Facilities (In nos) | | |
| Hemoglobin tests | - | 1610 |
| Urine tests | - | 715 |
| Sputum | - | 58 |
| Total MP Blood slide Tests cases | - | 8787 |
| P.F. Positive found | - | 3112 |
| P.V Positive found | - | 95 |

*Source – KHOJ Project Annual Reports 1994-95 to 2000-2001, ORRISSA.*

# IMPACT OF DEFORESTATION ON PHYSICAL AND CHEMICAL NATURE OF SOILS IN TWO TRIBAL VILLAGE ECOSYSTEMS ON EASTERN GHATS OF ORISSA – A COMPARATIVE STUDY

*S. Jammi Naidu*

**Key Words :**

Water holding capacity, texture, bulk density, porosity, particle density, $P^H$, Total organic carbon, available potassium, organic matter, total Nitrogen available phosphorous, shifting cultivation fields, crop fields, village ecosystem, Lanjia Saura Tribe, Suddha Saura Tribe.

**Abstract :**

This paper reports the degradation of physical properties and loss of soil nutrients due to deforestation and shifting cultivation in two tribal village ecosystems named Bidyadharapur (outside the forest) and Arakhapada (inside the forest) on Eastern Ghats in undivided Ganjam district of Orissa.

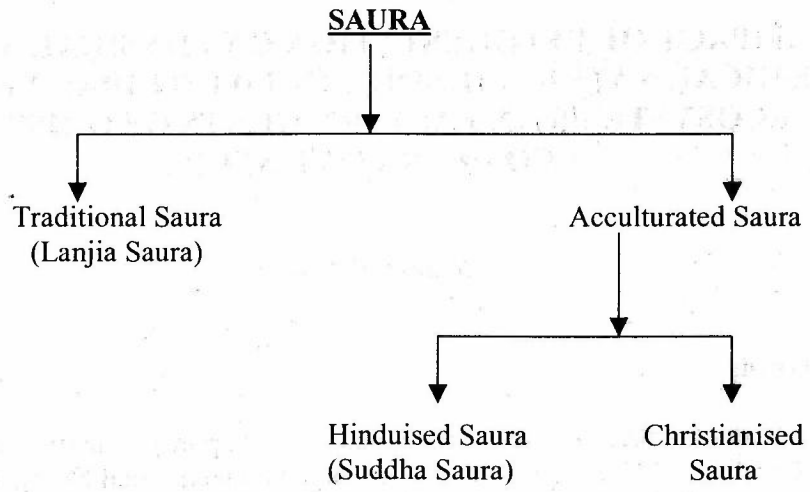
It also reveals the physical and chemical nature of soils at the mouth of a natural stream (at distance intervals of 100 meters) which takes its origin from the hilly slopes of Arakhapada (where shifting cultivation was practised) and channelised to fall in the crop fields of Bidyadharpur.

**Introduction :**

A tribal village along with its natural environment can be considered as an ecosystem (Nisanka and Misra 1990; Nayak et al 1993).

Arakhapada village and Bidyadharpur village are situated apart from each other at a distance of nearly two kilometers. A rakhapada is situated in a forest environment on a higher altitude and Bidyadharpur is situated on plain land outside the forest. A tribal people called Lanjia Saura inhabit in Arakhapada and that of Suddha Saura in Bidyadharpur. The Lanjia Saura of Arakhapada village ecosystem practise shifting cultivation (on nearby hilly slopes) and cultivation on valley land, whereas the tribals of Bidyadharpur practise only land cultivation on plain lands.

According to Das and Patnaik (1984-85), the origin and relationship of Lanjia Saura and Suddha Saura is shown in the following table.




During heavy rains, the water current of a natural stream carries eroded soil along with the nutrients from the hilly slopes of shifting cultivation of Arakhapada to the paddy fields of Bidyadharpur.

**Materials and Methods :**

The natural environment of village Arakhapada is forest, whereas that of Bidyadharpur is plain crop lands, both of which are adjacent with each other. In order to study the impact of deforestation on the nature of soil, the physical and chemical analysis of soils from shifting cultivation fields, paddy fields, Ragi fields and fallow lands of the two village ecosystems were carried on as shown in the table.

In addition to this, in order to acquire knowledge on the impact of deforestation, shifting cultivation and soil erosion the physical and chemical nature of soils and their related crop productivity was studied. The soil samples were taken at a distance interval of 100 meters up to the distance of 700 meters from the mouth of the natural stream in eight equal divisions (from 0-700 meters).

Soil samples were taken from triplicates and were thoroughly mixed and air dried. From each spot, two samples were taken: one from the top level and the other from 30cm bottom level by soil excavation. Then these soils were subjected to physical and chemical analysis in the laboratory.

i. Soil of virgin forest floor near slash and burn field (shifting cultivation field) were collected which was designated as Control, Similarly soil samples of shifting cultivation fields after one year, two year and three year crop were also collected. These soils were collected only in Arakhapada village ecosystem.

ii. Soil samples of paddy fields, ragi fields and fallow fields were collected from both the village ecosystems for analysis in the laboratory.

The physical and chemical properties of the soils were analysed as stated below.

Texture of 2 mm sieved soils (Mechanical analysis) was analysed using a Bouyoucut hydrolyser, a large measuring cylinder and a stirrer (Piper 1950, Wildeel et al 1979). The maximum water holding capacity of the soils was determined by Circular Brass Method (Wilde et al 1979). Bulk Density, porosity and particular density of solids were determined following Wilde et al (1979). Soil $P^H$ was determined with the help of a Glass-rod-electro pH meter taking 1:2 soil water solution.

Organic carbon was determined by Walkley and Black Method as discovered by Jackson (1967), soil organic matter was determined by Loss of ignition method (Allen et al 1976).

Soil elements such as total nitrogen, available phosphorus and potassium was determined following Allen et al (1976). Available phosphorus was estimated colorimetrically by Molybdenum Blue Method using a Cl-27 digital spectro-photometer. Available potassium was extracted with the help of ammonium acetate and analysed with the help of a Flame Photometer. Total nitrogen was estimated by Kjeldahl Digestion Procedure (Allen et al 1976).

**Result and Discussion :**

***Nutrient status of the cultivated fields & fallow lands :***

The results of the physical analysis of the soils collected from different shifting cultivation and crop fields are depicted in ***Table-01***.

It revealed that, the soil of the unburnt (control) field, that is the forest soil, was better in all respects, but after first year crop till the 3rd year, the soil gradually become infertile. Bottom soil (30 cm depth) was less affected than the top soil. The water holding capacity of the shifting cultivated soils revealed that, it increased in first year and then decreased up to 3rd year in the top; but decreased in the bottom soil from the 1st year up to 3rd year. The textural analysis showed that, the sand percentage of the soil increased in shifting cultivation fields in both top and bottom. Silt and clay contents of both top and bottom soil decreased in percentage in shifting cultivation fields (***Table-01***).

The analysis of water holding capacity of the soil of agriculture fields, such as paddy, ragi and fallow land revealed that, it was more in Bidyadharpur than that of Arakhapada, the sand percentage of the soils was less; but clay and silt contents were more in Bidyadharpur than that of Arakhapada. Soil porosity percentage was more in Bidyadharpur; but the bulk density was almost similar in both the villages. (***Table-01***).

***Table-02*** shows the chemical properties of the soils of Bidyadharpur and Arakhapada villages including the shifting cultivation fields of Arakhapada. The $P^H$ of the forest soil was almost neutral; but decreased after 1st year crop; but increased

subsequently reaching almost neutral. The soils of the paddy and ragi fields and fallow land were slightly alkaline. The soil $P^H$ was more than 7 except for Arakhapada paddy field top soil (Table-02).

***Table-02*** also shows that the quantity of total organic carbon, Available Phosphorus, Organic Matter, Total Nitrogen and Available Phosphorus is maximum (in both top soils and bottom soils) in the control shifting cultivation fields and the same gradually decreased from control to 1st year, 2nd year & 3rd year shifting cultivation fields. This reveals the fact that the virgin forest soil contains maximum quantity of soil nutrients. But due to the practice of shifting cultivation in the succeeding 1st, 2nd and 3rd years and because of soil erosion, the gradual decrease in soil nutrients comes to the picture.

If we observe the soil nutrients in paddy fields, ragi fields and fallow land (in table-02) of Bidyadharpur and Arakhapada in both top soils and bottom soils, the quantity of nutrients are more in the soils of Arakhapada (inside the forest) compared to that of Bidyadharpur (outside the forest). This may reveal the fact that the root-soil-complex system of the forest plants entrap the soil nutrients without giving any scope for soil erosion and loss of nutrients, which suggests one of the burning examples of impact of deforestation on the nature of soil and on the structure and functioning of the above two village ecosystems.

***Table-03*** shows the physical characteristics of the soil of the 8 sites. Textural analysis of the soil indicates that there was a little fluctuation in the sand silt & clay contents of the soils in all the sites. The water holding capacity of the mouth soil was maximum whereas other soils show no particular trend. No significant difference was observed in the bulk density, porosity and particle density of the soils collected from different segments.

***Table-04*** indicates the chemical properties of the soils. There was no remarkable change in the $P^H$ of the soils at different segments. The quantity of organic matter, total organic carbon, Available Potassium, Total Nitrogen, Available Phosphorus is maximum at 0 (zero) meter segment and gradually declines if one proceeds through 100 m, 200 m, 300 m, 400 m, 500 m, 600 m and 700 m segments (700 m segment being the minimum quantity of soil nutrients). This trend is applicable to both top and bottom sample-soils at each and every segment. This reveals the fact that, the soil nutrients of the eroded soils of shifting cultivation fields of Arakhapada are being carried by the water current of the natural stream and transported to the paddy fields of Bidyadharpur.

The gradual decline in the quantity of soil nutrients in the succeeding segments from the mouth (zero segment) of the stream may be due to the fact that, the silting quantity eroded soil particles rich in soil nutrients, gradually declines from zero meter segment to 700 meter segment, because of various physical phenomena like gravity of soil particles, resistance offered by the soil of paddy fields and decline in the speed of the water current. The cause of this declining pattern of soil nutrients may be due to deforestation, shifting cultivation, soil erosion and transport of these soil nutrients by the water current of the natural stream to the paddy fields of Bidyadharpur.

***Table-05*** reveals that, the total above ground biomass of paddy and paddy grain productivity is maximum at zero segment (8.47 & 4.45 t dry wt. $ha^{-1}$ respectively) and minimum at 700 meter segment. (1.37 and 0.43 t dry wt $ha^{-1}$). This keeps a +ve correlation with the quantity of soil nutrients present in the above 0 to 700 m segments.

**Conclusion:**

1. Due to deforestation and shifting cultivation the quantity of soil nutrients gradually declined from control podu field though 1st year, 2nd year and 3rd year podu fields.

2. The quantity of soil nutrients of crop fields (Paddy field, Ragi field) and fallow land are comparatively higher in Arakhapada village ecosystem than that of Bidyadharpur village ecosystem due to entrapping of soil nutrients by the root-soil-complex system of the forest plants.

3. Because of deforestation, shifting cultivation (podu), soil erosion and transport of soil particles rich in soil nutrients by the water current of the natural stream, there is quantitative declining pattern of soil nutrients from zero meter segment to 700 metre segment having similar +ve correlation with the quantity of paddy grain productivity and above ground biomass productivity of paddy plants in the corresponding segment (zero m to 700 m segments).

***Acknowledgement :***

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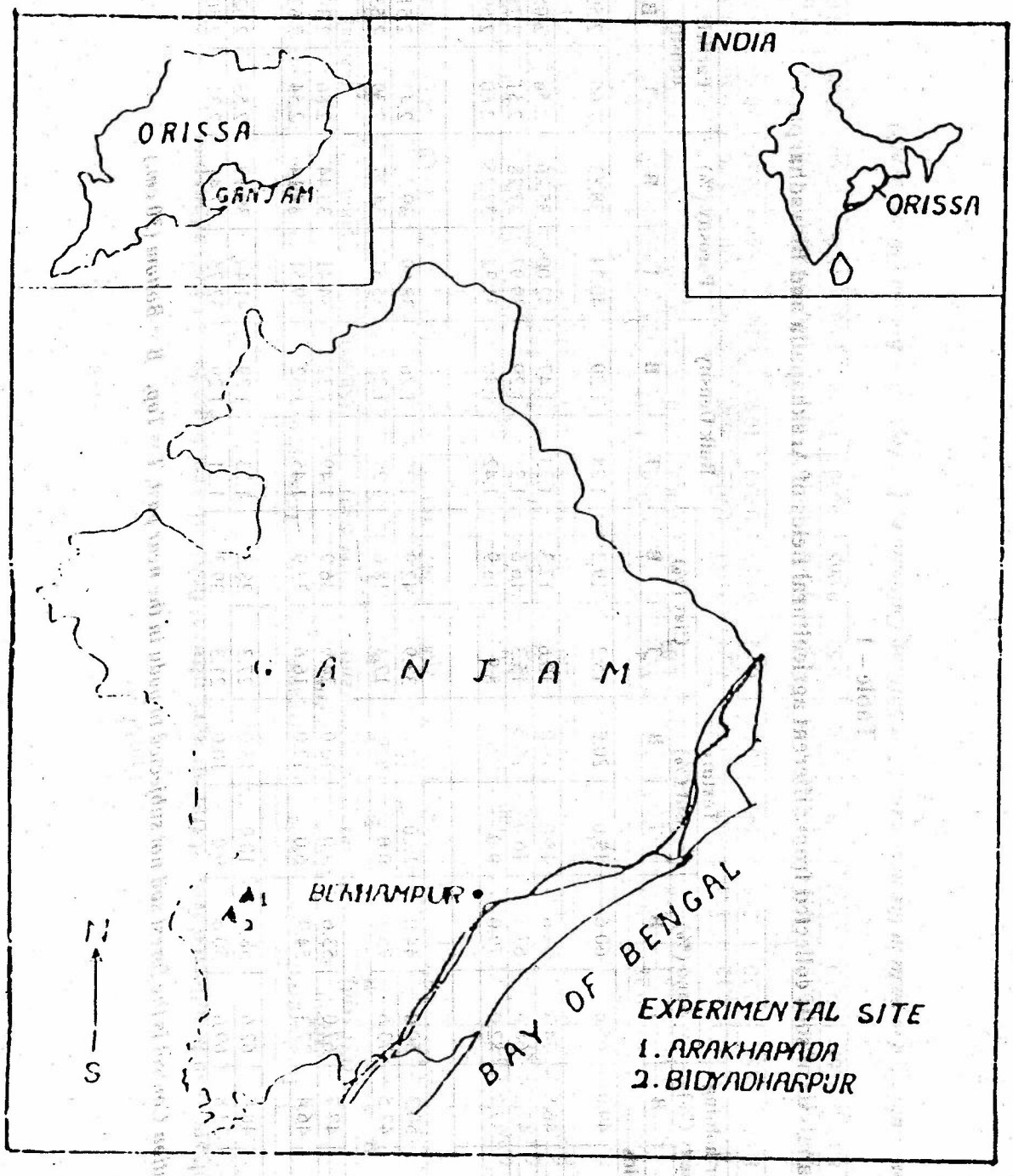



Fig – 2.1 Map showing the experimental sites.

## Table – 1

## Physical analysis of soils collected from different agricultural fields of Arakhapada and Bidyadharpur

| Sites | Water holding capacity (%) | | Texture | | | | | | Bulk Density | | Porosity (%) | | Particle density | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sand (%) | | Silt (%) | | Clay (%) | | | | | | | |
| | T | B | T | B | T | B | T | B | T | B | T | B | T | B |
| **Shifting cultivation fields** | | | | | | | | | | | | | | |
| Control unburnt | 45.4 | 49.0 | 65.6 | 60.6 | 19.0 | 20.0 | 15.3 | 19.3 | 1.28 | 1.29 | 40.34 | 38.83 | 2.66 | 2.59 |
| Ist year | 50.0 | 46.8 | 74.3 | 63.6 | 15.0 | 19.0 | 10.6 | 17.3 | 1.23 | 1.47 | 42.00 | 35.26 | 2.56 | 3.05 |
| 11nd year | 47.5 | 47.2 | 68.6 | 67.3 | 16.0 | 16.0 | 15.3 | 16.6 | 1.25 | 1.29 | 39.97 | 37.28 | 2.51 | 2.28 |
| IIIrd year | 31.1 | 37.7 | 82.0 | 79.0 | 9.0 | 7.0 | 8.9 | 13.9 | 1.42 | 1.40 | 31.32 | 32.25 | 2.60 | 2.59 |
| *Crop field* | | | | | | | | | | | | | | |
| **Paddy field** | | | | | | | | | | | | | | |
| Bidyadharpur | 54.6 | 50.3 | 50.0 | 44.0 | 16.0 | 13.0 | 33.9 | 42.9 | 1.25 | 1.26 | 38.69 | 39.3 | 2.43 | 2.51 |
| Arakhapada | 41.1 | 42.5 | 73.6 | 75.3 | 9.0 | 6.0 | 17.3 | 18.6 | 1.29 | 1.35 | 35.51 | 34.27 | 2.39 | 2.53 |
| **Ragi field** | | | | | | | | | | | | | | |
| Bidyadharpur | 40.8 | 47.7 | 67.0 | 53.6 | 8.0 | 10.0 | 24.9 | 36.9 | 1.49 | 1.32 | 34.41 | 33.44 | 2.86 | 2.39 |
| Arakhapada | 37.9 | 46.4 | 77.3 | 54.0 | 6.0 | 12.0 | 16.6 | 33.9 | 1.45 | 1.32 | 29.51 | 37.14 | 2.54 | 2.62 |
| **Fallow field** | | | | | | | | | | | | | | |
| Bidyadharpur | 48.4 | 48.0 | 62.6 | 58.6 | 10.0 | 13.0 | 27.3 | 28.3 | 1.23 | 1.29 | 41.44 | 39.19 | 2.53 | 2.62 |
| Arakhapada | 44.0 | 33.8 | 69.6 | 50.6 | 9.0 | 10.0 | 21.3 | 39.3 | 1.31 | 1.29 | 32.75 | 37.41 | 2.31 | 2.50 |

***SC = Shifting Cultivation Control is the forest soil not subjected to podu in the near past, T = Top, B = Bottom (30 cm.)***

## Table – 2

## Chemical analysis of soils collected from different agricultural fields of Arakhapada and Bidyadharpur

| Sites | $P^H$ | | Total organic carbon (Per cent) | | Available Potassium (kg/ha) | | Organic matter (Per cent) | | Total nitrogen (Per cent) | | Total nitrogen (kg/ha) | | Available Phosphorous pmm | | Available Phosphorous (kg/ha) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | T | B | T | B | T | B | T | B | T | B | T | B | T | B | T | B |
| **Shifting cultivation fields** | | | | | | | | | | | | | | | | |
| Control before unburnt | 6.82 | 6.67 | 2.47 | 1.16 | 315 | 126 | 4.26 | 2.00 | 0.247 | 0.116 | 49.44 | 23.22 | 17.00 | 13.00 | 34.00 | 26.00 |
| Ist year | 6.54 | 6.76 | 1.92 | 1.14 | 279 | 100 | 3.31 | 1.97 | 0.192 | 0.114 | 38.38 | 22.90 | 7.00 | 4.95 | 14.00 | 9.90 |
| 11nd year | 6.70 | 6.85 | 1.69 | 0.74 | 200 | 87 | 2.92 | 1.28 | 0.169 | 0.074 | 33.38 | 14.90 | 6.90 | 4.00 | 13.80 | 8.00 |
| IIIrd year | 7.05 | 6.69 | 1.13 | 0.58 | 147 | 77 | 1.94 | 1.01 | 0.113 | 0.058 | 22.52 | 11.68 | 4.90 | 3.00 | 9.80 | 6.00 |
| *Crop field* | | | | | | | | | | | | | | | | |
| **Paddy field** | | | | | | | | | | | | | | | | |
| Bidyadharpur | 7.30 | 7.89 | 0.80 | 0.28 | 105 | 52 | 1.39 | 0.48 | 0.081 | 0.028 | 16.12 | 5.54 | 11.50 | 3.50 | 23.00 | 7.00 |
| Arakhapada | 6.53 | 7.29 | 1.43 | 0.63 | 158 | 82 | 2.46 | 1.08 | 0.143 | 0.063 | 28.60 | 12.56 | 33.50 | 11.00 | 67.00 | 22.00 |
| **Ragi field** | | | | | | | | | | | | | | | | |
| Bidyadharpur | 7.95 | 7.63 | 0.34 | 0.12 | 134 | 82 | 0.59 | 0.21 | 0.034 | 0.012 | 6.83 | 2.50 | 5.40 | 5.40 | 10.80 | 10.80 |
| Arakhapada | 7.15 | 8.17 | 0.55 | 0.30 | 265 | 390 | 0.94 | 0.52 | 0.055 | 0.030 | 10.98 | 6.08 | 15.40 | 26.80 | 30.80 | 53.60 |
| **Fallow field** | | | | | | | | | | | | | | | | |
| Bidyadharpur | 7.61 | 7.65 | 0.45 | 0.19 | 111 | 62 | 0.78 | 0.33 | 0.045 | 0.019 | 9.10 | 3.89 | 4.80 | 6.80 | 9.60 | 13.60 |
| Arakhapada | 8.19 | 8.17 | 0.65 | 0.30 | 130 | 76 | 1.12 | 0.52 | 0.065 | 0.030 | 13.00 | 6.06 | 18.00 | 17.00 | 32.00 | 34.00 |

***Control is the forest soil not subjected to podu in the near past. SC = Shifting Cultivation, T = Top, B = Bottom (30 cm. depth)***

## Table – 3

**Physical analysis of the soils collected from the crop fields from the mouth of the stream at 100 m interval located at Bidyadharpur**

| Distance (m) | TEXTURE | | | | | | Water holding capacity | | Bulk density | | Porosity % | | Particle density | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sand | | Silt | | Clay | | | | | | | | | |
| | T | B | T | B | T | B | T | B | T | B | T | B | T | B |
| 0 | 47 | 53 | 26 | 16 | 27 | 31 | 56.4 | 63.8 | 1.30 | 1.26 | 39.4 | 45.2 | 2.68 | 2.95 |
| 100 | 63 | 59 | 14 | 16 | 23 | 25 | 48.5 | 48.1 | 1.35 | 1.31 | 36.9 | 39.3 | 2.70 | 2.70 |
| 200 | 51 | 59 | 14 | 8 | 35 | 33 | 54.8 | 60.4 | 1.39 | 1.37 | 30.7 | 36.4 | 2.44 | 2.75 |
| 300 | 65 | 65 | 8 | 8 | 27 | 27 | 48.0 | 47.5 | 1.30 | 1.40 | 43.3 | 35.6 | 2.97 | 2.80 |
| 400 | 53 | 53 | 16 | 10 | 31 | 37 | 52.7 | 64.3 | 1.30 | 1.42 | 39.6 | 33.3 | 2.68 | 2.70 |
| 500 | 53 | 54 | 17 | 14 | 30 | 32 | 50.9 | 60.9 | 1.30 | 1.31 | 36.3 | 36.6 | 2.68 | 2.76 |
| 600 | 56 | 58 | 16 | 12 | 28 | 30 | 49.3 | 56.8 | 1.33 | 1.35 | 38.0 | 37.9 | 2.69 | 2.78 |
| 700 | 59 | 61 | 14 | 11 | 27 | 28 | 47.6 | 52.7 | 1.36 | 1.39 | 39.6 | 39.3 | 2.70 | 2.80 |

**Table-4** Chemical analysis of the soils collected from the crop fields from the mouth of the stream at 100 m interval located at Bidyadharpur

| Distance (m) | pH | | Organic matter % | | Total organic carbon % | | Available potassium (kg $Ha^{-1}$) | | Total nitrogen Per cent | | Total nitrogen ($kg\ ha^{-1}$) | | Available phosphorus Ppm | | Available phosphorus $Kg\ ha^{-1}$ | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | T | B | T | B | T | B | T | B | T | B | T | B | | | T | B |
| 0 | 7.6 | 7.2 | 3.79 | 2.12 | 2.20 | 1.23 | 177.5 | 122.5 | .220 | .123 | 44.0 | 24.6 | 20.0 | 20.0 | 40.0 | 40.0 |
| 100 | 7.4 | 7.3 | 2.04 | 1.12 | 1.18 | 0.65 | 102.5 | 102.5 | .118 | .065 | 23.6 | 13.0 | 19.0 | 12.0 | 38.0 | 24.0 |
| 200 | 6.8 | 7.3 | 1.98 | 0.69 | 1.15 | 0.40 | 92.5 | 97.5 | .115 | .040 | 23.0 | 8.0 | 12.0 | 7.0 | 24.0 | 14.0 |
| 300 | 6.3 | 6.9 | 1.82 | 0.59 | 1.06 | 0.34 | 82.5 | 70.0 | .106 | .034 | 21.2 | 6.8 | 02.0 | 4.8 | 4.0 | 9.6 |
| 400 | 7.2 | 7.4 | 1.41 | 0.56 | 0.82 | 0.32 | 72.5 | 65.0 | .082 | .030 | 16.3 | 6.5 | 1.6 | 2.0 | 3.2 | 4.0 |
| 500 | 6.8 | 5.8 | 1.35 | .46 | 78 | 27 | 64.5 | 60.0 | .078 | .027 | 15.7 | 5.3 | 1.4 | 1.8 | 2.8 | 3.6 |
| 600 | 6.8 | 6.8 | 1.59 | 0.41 | .69 | .24 | 58.5 | 57.0 | .069 | .024 | 13.8 | 4.7 | 1.2 | 1.6 | 2.4 | 3.2 |
| 700 | 6.8 | 6.8 | .78 | .38 | .45 | .22 | 54.5 | 54.0 | .045 | .022 | 9.0 | 4.4 | 1.1 | 1.4 | 2.2 | 2.8 |

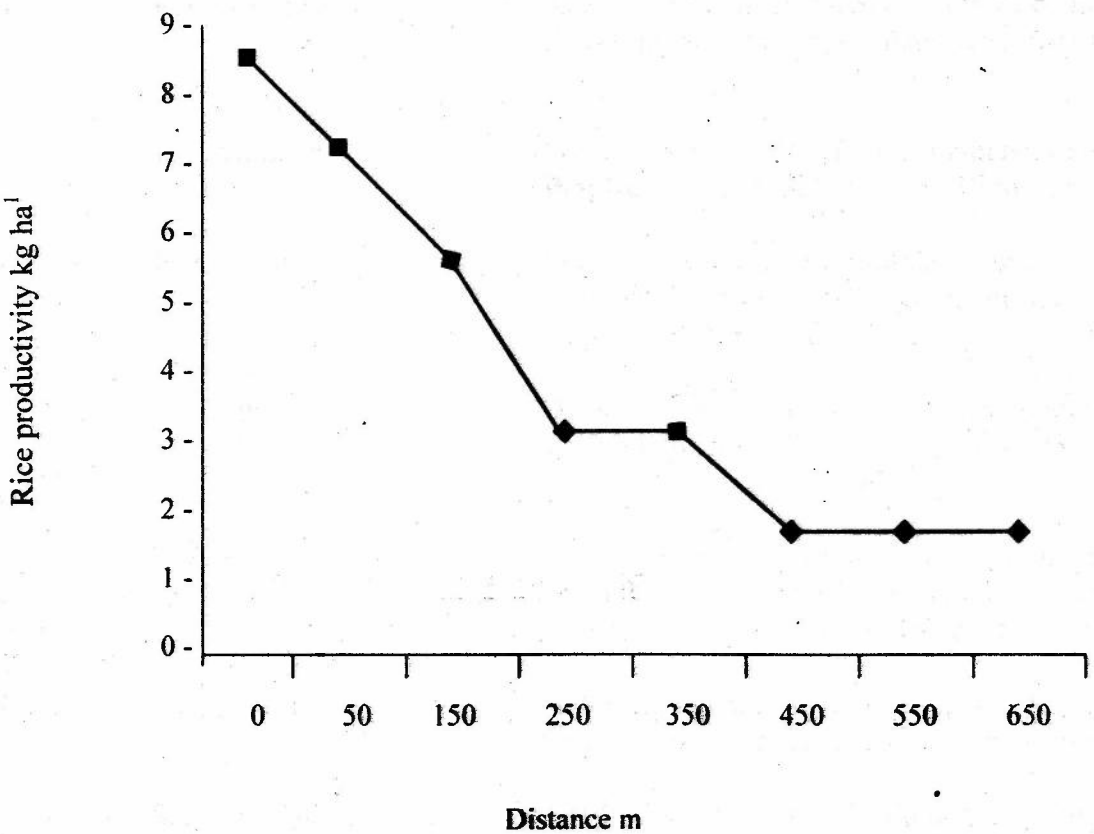


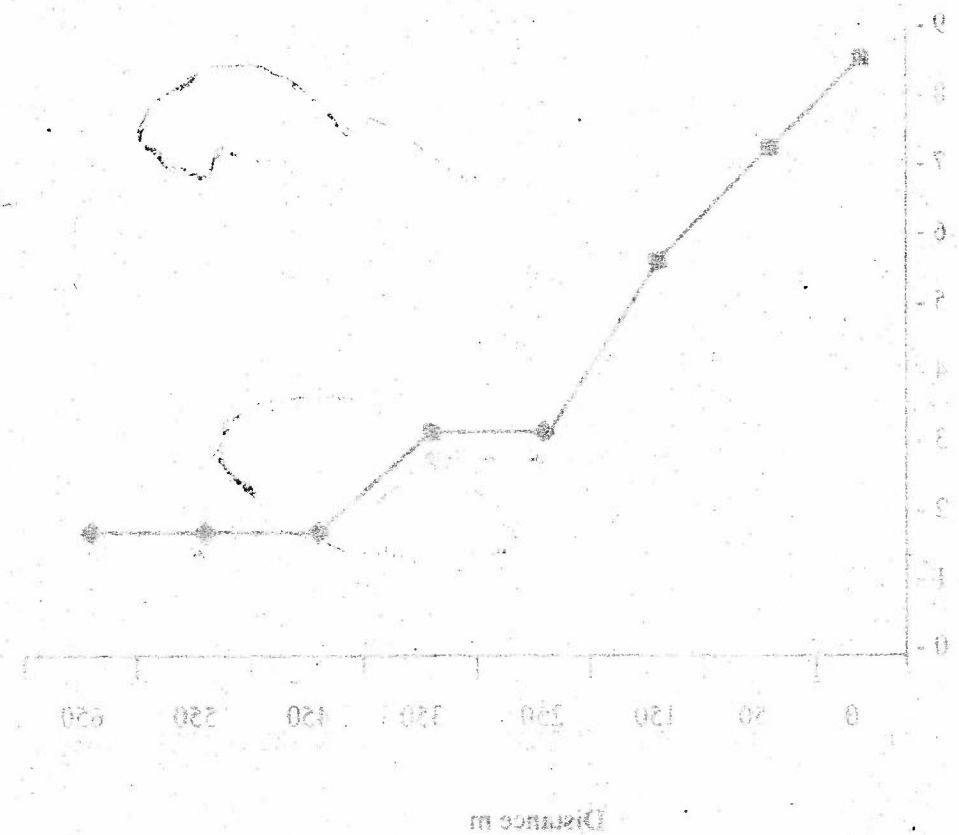

**Fig-1** Above ground biomass of paddy grown in the fields which received eroded and transported soils in Bidyadharpur village ecosystem at 100m interval

**Table – 5**

**Above ground biomass of paddy grown in the fields which received eroded and transported soil in Bidyadharpur village ecosystem at 100 metres interval.**

T dry wt $ha^{-1}$

| Distance (m) | Grain | Straw | Residue | Total biomass |
|---|---|---|---|---|
| 0 | 4.448 | 3.601 | 0.424 | 8.473 |
| 100 | 2.367 | 3.314 | 1.420 | 7.101 |
| 200 | 2.704 | 2.124 | 0.483 | 5.311 |
| 300 | 1.62 | 1.134 | 0.324 | 3.078 |
| 400 | 1.345 | 1.345 | 0.374 | 3.064 |
| 500 | 0.550 | 0.756 | 0.206 | 1.512 |
| 600 | 0.419 | 0.702 | 0.336 | 1.457 |
| 700 | 0.428 | 0.623 | 0.320 | 1.371 |



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