



Development under Wasteland Environment – An Approach for Sustainable Livelihood in Jangal Mahal

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Abstract

The In Jangal Mahal area of West Bengal, the existing vast stretch of undulating drought prone Acid Lateritic Wasteland, confined mostly to the districts of Paschim Medinipur, Purulia and Bankura happens to be the result of continuous process of deforestation followed by severe erosional hazards over years. A sizable fraction of this wasteland has however the potential of raising a good number of agro-horticultural crops, as evident from some of the standing orchards located in some spots of these districts. In spite of development endeavors, irrespective of Govt. and NGOs, over past five decades, there has not been any significant change in the status of these Wastelands

In spite of the above constraints, the wasteland tracts of Jangal Mahal have tremendous potential for development of natural resources like wasteland, forest, water, animal resources etc. It is expected that given opportunities of wasteland development along with skill formation among the participant villagers and transfer of appropriate technologies, these wastelands can sustain the majority of dependent households with necessary work and earning opportunities.

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Introduction

In Jangal Mahal area of West Bengal, the existing vast stretch of undulating drought prone Acid Lateritic Wasteland, confined mostly to the districts of Paschim Medinipur, Purulia and Bankura happens to be the result of continuous process of deforestation followed by severe erosional hazards over years. A sizeable fraction of this wasteland has however the potential of raising a good number of agro-horticultural crops, as evident from some of the standing orchards located in some spots of these districts.

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In spite of development endeavors, irrespective of Govt. and NGOs, over past five decades, there has not been any significant change in the status of these Wastelands for the following reasons:

- a) Distribution of these wastelands among the local people who mostly belong to below poverty level (BPL) families and have hardly any urge for growing horticultural or agro-forestry crops on preference to annual staple food crops viz., cereals, pulses, oil seeds etc.
- b) High capital investment for the costly provisions like land shaping, land reclamation, soil amelioration, preparatory operation (pit marking), planting materials, manures and fertilizers, pesticides, establishment of windbreak, development of water resources, fencing for protection against grazing by animals etc. does not attract the poor villagers in such efforts.
- c) Long gestation period of horticultural crops, timely disposal of produce for marketing besides the long term and substantial investments etc do not attract the socio-economically backward people of the area in such ventures.
- d) The modern technologies of development of wastelands including development of allied sectors like animal resource development, Pisciculture, food processing, promotion of rural crafts etc as integrated part of wasteland development have not been adequately attended.
- e) Above all, since independence the major part of Jangal Mahal area had been considered as drought prone area and hence all the projects and action plans taken there had the focus on drought relief. That an area with nearly 1500 mm rainfall and subjected to severe surface and sub-surface run-off can be gradually converted to a productive land with application of appropriate technologies was never given due consideration.

In spite of the above constraints, the wasteland tracts of Jangal Mahal have tremendous potential for development of natural resources like wasteland, forest, water, animal resources etc. It is expected that given opportunities of wasteland development along with skill formation among the participant villagers and transfer of appropriate technologies, these wastelands can sustain the majority of dependent households with necessary work and earning opportunities.

2. Geographical Background

The Jungle Mahal area of West Bengal extends from $21^{\circ}36'35''N$ to $23^{\circ}42'00''N$ latitudes and from $85^{\circ}49'00''E$ to $88^{\circ}12'40''E$ longitudes. Its total geographical area is 22509 sq. km and it has a total population of 113.31 lakhs according to 2011 census.

The western part of Jangal Mahal extends over the flank of Chotanagpur Plateau with occasional eroded remnants of hills and plateaus. The middle part of the region generally shows a rolling but undulating landscape with boulders, older alluvium and lateritic soils. The eastern part of the landscape exhibits gently sloping terrains and a generally flat plain with intermittent flood plains and valley fills. The entire area of Jungle Mahal is traversed by a number of east and south-east flowing rivers namely Damodar, Darakeswar, Silabati, Kasai, Kaliaghai, Kangsabati, Subarnarekha and many other small streams and tributaries.

Physiographic features: The area is characterized by undulating topography and gentle slopes. The soil of the region is characterized by lateritic and younger alluvial soils. The landscape appears to be dry and barren round the year except in rainy season and early winter when green patches with grasses and weeds cover the top soil. On top of the heaps of lateritic boulders at certain places some thorny bushes and Xerophytic vegetations sustain round the year. Jangal Mahal has 3, 96,000 ha of land under forests and about 45,000 ha has been identified as wastelands. Nearly two-third of this area i.e. 30,000 ha of the existing wasteland area is considered to be recoverable and developable. The forested tracts are Sal dominated dry deciduous forest areas with occasional patches of Palash coverage. Natural vegetation also includes some scattered tree species like Neem, Sheora, Kanta Sirish, Chatim etc besides remnants of earlier efforts of plantation namely Cashew nut, Akashmoni, Arjun, Amaltash etc.

Climatic Condition: The region receives an average annual rainfall of about 1450 mm. More than 70% of its annual rainfall occurs in the four months from June to September. The dry season is between November and February, when less than 5% of the total annual rainfall is received. The mean annual temperature is about 28.4°C. Erosive potential of rain is very high where the rainfall erosivity factor (R) varies between 1200 and 1500 $\text{MJ mm ha}^{-1} \text{ h}^{-1} \text{ year}^{-1}$. The area is occasionally associated with rain fed farming practice with high soil erosion and low crop productivity.

Soil Properties: The depth of soil is too shallow. Its texture is sandy and gravelly with very low water and nutrient holding capacity, which are the consequences of severe soil erosional and loss of nutrients by surface runoff. The worst impact of erosional hazards is witnessed by partial exposure of lateritic rocky strata here and there on the land surface. The soil characteristics of the area under consideration may be summarized as below:

- (i) Rugged terrain
- (ii) Shallow depth of surface soil
- (iii) High surface and sub-surface runoff
- (iv) Low soil moisture and Low retention capacity
- (v) Low organic matter
- (vi) Low CEC, Ca, Mg, K, Zn
- (vii) High Fe, Mn and Al

These characteristics are known to be responsible for poor growth and low yield of crops cultivated. This land of Jangal Mahal barring its hills, hillocks and exposed rocky stratas is virtually a typical wasteland demanding special agro-technological treatment and management for improving the land productivity followed by a host of subsidiary activities.

3. Socio-Economic Status: The household survey in some selected wasteland areas of Jangal Mahal reveal that more than 70% households live below poverty level (BPL) while households of APL category stand within 25 to 30%. The occupational dependency of villagers reported that nearly 50% families remain engaged in cultivation practices as cultivators and agricultural labours and other 10 to 15% are identified as marginal labourer in non-agricultural activities while the rest 30 to 40% families depend on forests for felling, transplantation and NTFP collection. The dependency on livestock rearing, services and business are too meagre. Only in few selected villages some families are found to be engaged in household based crafts activities. This sector is also not prospering due to lack of adequate skill, absence of financial, technological and marketing support from government or private agencies or NGOs and institutions. However, formation of Self Help Groups (SHG), advancing some schemes for financial and technological support from Government and financial institutions, arranging programmes of awareness generation, creation of marketing facilities, organization of skill based trainings etc are some positive steps for sustainable income generation by certain craftsmen of these areas.

Therefore, the lateritic wastelands of Jangal Mahal have been the typical habitat of these socio-economically backward people, majority of whom belong to some disadvantaged communities and fall in BPL category. In economic term, the rock

bottom poverty has been a chronic feature with most of these people who happen to be the worst victims of the man made transformation process of agricultural and forest wealth to fragile wasteland ecological niche. Allocation of such wastelands to resource poor people of the area i.e. marginal land given to marginal people without adequate input support, hardly does any benefit to them rather than exaggerating the existing wasteland problems. This calls for an initial effort of developing a few experimental sites considering the processes and techniques of development and management of such lands before taking entire wasteland area with huge risks and responsibilities.

3. Objectives of Wasteland Development as Envisaged in Jangal Mahal:

1. To develop economically viable appropriate Agri- Horti- Silvicultural system of production using 3 to 4 pilot experimental sites measuring about 40 to 50 hectares each and representing typical acidic lateritic drought prone areas of Jangal Mahal.
2. To make use of the experiences of these pilot project sites for undertaking the venture on a large commercial scale in the long run. For this, an advanced action related to official and legal formalities involved in acquisition of such wastelands extending over 40 to 50 hectares in a single stretch has to be initiated in suitable selected Blocks of Jangal Mahal.
3. To generate employment and income for the socio-economically backward people living in each selected area, besides promoting their accessibility to improved agri-horticultural technology and skill information and entrepreneurial ability building for producing, processing and marketing of regionally and nationally marketable processed products and crafts.
4. To create opportunities of livelihood to poor marginal farmers and landless households through their active participation in such venture of integrated wasteland development over the region.

4. Important Physical Provisions

From the above facts in view, any programme of wasteland development in Jangal Mahal must have to be prepared with the financial provision for

- i) Land shaping and laying out roads and irrigation channels based on contour survey.

- ii) Development of surface and underground water sources assuring life saving irrigation
- iii) Limited energization for irrigation, operating farm machineries, processing food and feed, lighting etc.
- iv) Permanent fencing for protection of the crops against grazing hazards, pilferage etc
- v) Provision for use of necessary farm machineries and tools.
- vi) Cost for production and protection of the crops against disease and insects, besides harvesting, processing and marketing.

5. Schedule of Activities

The long cherished effective use of this acid lateritic wasteland resource for appropriate agro-forestry and agro-industry (small & micro enterprises) leading to employment and income generation for sustainable livelihood to socio-economically disadvantaged people of the area thus calls for a stream of activities as outlined below:

1. Selection of Area and Resource Inventory
2. Identification of parcels of wasteland sites measuring around 50 ha at a stretch.
3. Selection of adjacent villages and expected families to be benefited with their participation
4. Soil testing and possible direction of crop planning
5. Farm layout, fencing, land reclamation including shaping and amelioration measures.
6. Programming exploration of surface and sub- surface water sources
7. Crop Planning with emphasis on Agro- Horti- Silvi cultural programmes
8. Animal Resource Development as allied to agricultural programmes including fodder raising and feed production and management
9. Piscicultural activities in the created waterbodies including fingerling production.
10. Nursery Raising for production of planting materials including promotion of medicinal plants.
11. Development of micro- enterprises including formation of SHGs, Farmer's Clubs and other informal associations. Technology transfer with Training for production and marketing of local resource based crafts (Sabai and Sisal ropes

and crafts, bamboo crafts, Sal leaf- plate making, bee-keeping & honey-processing, vermi-composting, mushroom production & processing etc).

12. Food processing and marketing from forest edibles (Mahua, cashew apple, tuber crops etc) and local resources (tomato, water-melon, mango, other local fruit crops) like Squash, Jam, Jelly, Sauce, Marmalade, Soft Drinks, Pickles and other variety chips etc). Skill Training including marketing, finance mobilization and organization building for micro-enterprises.
13. Awareness generation and Social Capability Building through informal education, promotion of traditional folk culture and health care initiatives (specially for women, illiterate persons and school-dropouts).

6. Management Issues:

It is proposed to be a Participatory Programme of Wasteland Development over significant large chunk of land preferably between 50 to 100 ha and integrated with consequent animal resource development through fodder and feed production, food processing, craft development etc. Such a programme site area may be constituted of land pulled from one or more sources under suitable agreement.

From the management viewpoint, this initial programme taking 3 to 4 sites may be considered as Master Plan for Wasteland Development and its implementation remains as the target with the larger interests of livelihood generation for the poor villagers around the sites. It is proposed to be a Government funded Participatory Programme of Wasteland Development over a significant large chunk of land preferably at 3 to 4 sites with 50 to 100 ha in each site and involving villagers living in and around. This programme will be integrated with consequent stream of activities, like animal resource development through fodder and feed production, pisciculture, food processing, craft making etc. The management issues of this type of action programme will involve three major areas of decision making namely, provisions for land, investible fund (capital) and participatory skill (manpower).

Land:

The Wasteland stock of this region may be constituted of vested land and/or institutional land or rayati land to be contributed by beneficiary participants. It may be accumulated from one or more sources drawn under the appropriate agreement. For wasteland development programme at any locality the land area may be flexible to

contain the entire wastelands falling under the jurisdictions of several selected villages participating together.

a) Investible Fund:

Mobilization of high order of fund amounting 5 to 10 crores of rupees remains to be the major obstacle of development of any wasteland site. This fund is required to be spent in successive 3 to 4 years without any break for successful implementation by the management. It is not possible to explore the collective sources of the participants. Neither it could be borrowed from financial institutions since majority of the participants possess meagre assets. Just like 'Bit by Bit' Development of underdeveloped countries, as enunciated by Rosentien Rodan in his 'Big Push' theory, here also discontinuous partial investments of small amounts over a long period cannot scale over the obstacles of successful sustainable path of development of the wasteland and hence the sustainable livelihood of the participant villagers. It is necessary to explore the entire fund as one time grant (like Big Push) from Central or State Government or International Donor sources to be spent in 3 to 4 successive years as per estimates of development of first phase.

b) Participatory Skill:

Management of manpower resources for such a programme also suffers from incapability of the participants to perform in the way this type of scheme demands. Though their traditional skill and customary methods are useful to a certain extent, actually they are required to be sensitized, motivated, skilled and enriched with the expected new entrepreneurial abilities. In fact, the new activities vis-a vis the new technologies will demand a series of actions to be imparted for their capability building. Those are:

1. Creation of continuous awareness and knowledge among the target villagers regarding potential resources and appropriate technologies through demonstration, village- meetings and other techniques of campaigning.
2. Motivating target population towards acquiring entrepreneurial abilities and self-employment.

3. Training of motivated entrepreneurs for skill formation.
4. Technology transfer to prospective skilled entrepreneurs involved in the scheme.
5. Make available the required resources including credit from financial institutions, if necessary.
6. Providing technical advices and assisting in setting up of Production Units.
7. Establishing tie-ups with local financial institutions, marketing agencies and raw material suppliers.
8. Upgradation and modification of technologies for continuous productivity rise and quality refinement based on the experience gained in the field and elsewhere in other regions.
9. Promoting Organizational build-ups of rural entrepreneurs like SHGs, Cooperatives, Informal Associations etc for creating more competent Wasteland based Units of Production of raw materials and finished products.

7. Conclusion:

Since recent past, unprecedented level of awareness has been created throughout the country for improving the status of wasteland as a vital natural resource. After the accordance of the National Wasteland Policy, 1986, greening the wasteland became a priority of concern in our planning and a focal area of work of many agencies to investigate into its potential for production and livelihood generation in the primary sector for tackling the problem of poverty and mal-nutrition. In fact, it is realized that the presence of wasteland is injurious to arable land, environment and economy and there is a felt need for developing wasteland as a natural resource for guaranteeing income and employment for millions of rural poor on one hand and for regional ecological balance on the other.

Jangal Mahal has about 25,000 ha of land under recoverable and developable wasteland coverage. Since eighties, efforts were given to distribute vested wastelands in the Districts of Jangal Mahal to landless and marginal farmers under Patta holding. The process of reclamation of such wastelands had not been effective since marginal lands had been given to marginal people and finally the indiscriminate plantation of certain species became the most common prescription for wasteland development. Unfortunately, the factors of wasteland formation, its use potentiality, existence of activities of in and around the wastelands, waste lands as source of morrum and boulder supplies, possibilities of biotic

encroachment, need for legal control, wise use of wasteland etc. are not given due consideration in the process of wasteland development in the country. The results of the above shortcomings have probably been the reclamation of few patches of wasteland on one hand and degradation of larger areas including reversal to wasteland on the other. The situation has demanded measures of integrated wasteland development at micro-level, in commensurate with land potentiality, infrastructure available and skill formation among the villagers nearby. The present proposal has been designed as one such programme that will highlight the process and mechanism of wasteland development in a pilot scale covering about 50 to 100 ha of land at a stretch in each site. Though this programme may be covering few small areas to be taken in a pilot scale, it is expected to exhibit the ways and means of integrated wasteland development that can comfortably support more than 200 to 300 families to live a sustainable livelihood. Uniqueness of such a programme is not only greening the land with crops and trees, but also generating activities in allied sectors and crafts for supporting micro-enterprises aiming at sustainable livelihood to all the actors.

The task of Wasteland Development in Jungle Mahal is a tough one to be worked out against many difficult odds. Since Independence, several rural development projects and programmes like DPAP, FFW, NWDPRA etc were taken up in which Wasteland Development remained as the most important component. However, much success could not so far be arrived at for various reasons and lapses. The Integrated Wasteland Development programme has to be taken up as a pioneering effort aiming at 'ice-breaking' in the drive of sustainable livelihood generation for the marginalized and disadvantaged families of this region. The entire 25,000 ha of existing developable wasteland of Jangal Mahal could be brought under action research with integrated development programmes as suggested above. Given the will of the Government, participation of the people and allocation of investment from public and private sources, the entire wasteland area of Jangal Mahal can witness the entire episode of 'Rolling back to Greeneries'. This 25,000 ha of wasteland can support 75,000 to 80,000 families with sustainable livelihood directly and nearly equal number of families can sustain through indirectly created activities. With this potential, the approximate investment rate for Integrated Wasteland Development to the tune of Rs 6.00 lakhs to 8.00 lakhs per hectare appears to be quite justified. Above all, this 25,000 ha of land can be transformed into productive land to be engaged in Multiple Cropping, Animal Resource Development, Pisciculture and several other allied activities. Thus today's barren tracts of Jangal Mahal and so to say of the entire Jangal Mahal area will be saved from reduction of

atmospheric moisture, increased siltation in the reservoirs, rampant soil degradation, pollution of water and air and total decline of land productivity. It is advisable 3 to 4 sites of wasteland for development measuring 20 to 25 ha each in Jangal Mahal with a total investment of Rs 10 to 12 crores can be tried just as the beginning of a magnificent deed of reclamation of acid-red lateritic wastelands in the country.

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