

Best Practices adopted for Rehabilitation of Degraded Areas

under NAP during 10th Plan period by different JFMCs of two circles of Haryana State

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PROLOGUE

India is well known for its diverse ecosystems and is placed amongst mega biodiversity countries. With 17% of world's population and 18% livestock population over 2.4% of world's total geographical area, India's forests are facing severe biotic pressures as nearly 40% of domestic fuel wood needs of the people and 30% of fodder needs of the cattle population in the country are being met from forests. Considering the role of forests in socio-economy and climate change mitigation, India has formulated and implemented a number of policies and programmes aimed at forest and biodiversity conservation, afforestation and reforestation. Further, India has a goal to bring one-third of the geographic area under forest and tree cover by 2012. The National Afforestation Programme (NAP) is one of such ambitious programmes launched in IX Five Years Plan Period by Govt. of India. It aims at rejuvenating degraded forest land and develop the forest resources with people's participation, focusing on improvement in livelihoods of the forest fringe communities especially the poor. The considerable success of the programme can be assessed from the fact that so far, a total of 1.67 million hectare has been reclaimed involving more than 800 FDAs with participatory approach in the entire country.

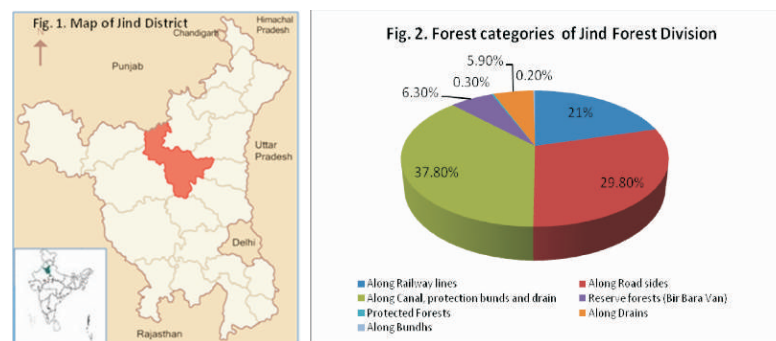
Like other states of the country, the state of Haryana has also been participating in NAP ensuring active participation of village level communities of forest fringe areas. The State is well known for its agriculture, however, as far as forest area is concerned it accounts only 3.52% forest area as against total geographic area. Out of this 15.97% are reserved, 74.28% protected, 9.75% un-classed and 8.59% fall under other notified forests. The State comprising of 1.35% area of country's land mass has only 0.2% forest area (0.155 million ha including 27,975 ha under Protected Area Network in its two National Parks at Kalesar and Sultanpur and 08 Wildlife Sanctuaries). Per capita forest area in the State is 0.007 ha against the national average of 0.08 ha. Forest types of Haryana are Tropical Dry Deciduous in North-Eastern region; Tropical Moist Deciduous in Shivalik region; and Tropical Thorn Forests in Western region. Besides the above forest area, the State has developed plantation forests on community lands and agro-forestry over 3.2% of its geographical area. At present, the total area under forest and tree cover is about 6.80% (State Forest Report 2009), much below the national goal of one-third area under forest and tree cover.

During last 10 years (2001-02 to 2010-11), the Haryana Forest Department (HFD) has achieved afforestation target of 41,579 ha under the NAP against the allotted target of 43,522 ha resulting in a physical achievement of 95.53%. As the state has limited area to

expand the forest cover, therefore adoption of agro-forestry, proper utilization of individual and problematic lands is essential to achieve the target under the National Forest Policy. Also, due to its high fertility, the area along/nearby the agricultural fields which has been encroached upon by the farmers, need to be identified and cleared off the illegal encroachments. This land may then be used for raising new plantations. Under NAP, a number of good practices have been adopted for reclamation of the problematic areas and eviction of illegally encroached lands through participatory approach. The present work is an attempt to document the best practices adopted for the rehabilitation of degraded land by Forest Department, Haryana, through involvement of VFCs/JFMCs. Two Forest Divisions i.e. Jind Forest Division, Northern Circle and Karnal Forest Division, Central Circle of Haryana were selected as per the suggestion of Nodal Officer NAP Haryana to document the efforts made. The objective of the present document is to assess the status of work done, its impact on ecology and socio-economy of the area and role of JFMCs formed under the project.

1. JIND FOREST DIVISION

Jind Forest Division comprises of entire civil district of Jind with a total geographical area of 2720 sq km and located in central part of Haryana adjoining Rohtak, Sonapat, Kaithal, Karnal, Panipat and Hissar districts (**Fig. 1**). The whole Forest Division has been distributed in three Forest Ranges i.e. Jind (Jind North, Jind South, Julana), Safidon (Pillu Khera, Safidon-I, Safidon II) and Nirwana (Uchana, Narwana, Dhamtan). The forests of the Division mostly in the form of strips are situated along railway lines, roads, drains, protection bunds and canals with one compact block of forest having 1200 acre is situated near the city. The classification of forest of the division is shown in **Fig.2**



1.1 Initiation of the FDA project

The project commenced in the year 2005-06, with a total target of rehabilitation of 2800 ha of degraded govt., forest land, community and panchayat land, to be treated under the project for rehabilitation of artificial regeneration/existing forest which are partly in the

form of strips and plantation of multipurpose tree species on panchayat and community lands. The majority of the land of the Division is being utilized for agriculture and only a limited area has been notified under forest, therefore, the only way to increase tree cover in the district is to carry out plantation intensively in each and every piece of available land and ensuring 100% survival. Therefore, vacant land available along railway lines, canals, roads, in schools, in Primary Health centers, in Police Stations etc. were taken for plantation purposes. Most of the area chosen for plantation was either low lying or water logged.

1.2 Selection of species

Instead of carrying out mono species plantation, priority has been given to mixed species plantation at most of the sites. Species were selected as per the requirement of villagers and agro climatically suitability for the area. For instance in the low lying and water logged areas *Eucalyptus spp* and *Terminalia arjuna* was selected for the plantations. Along canal bunds, near the railway lines or station, priority has been given to mixed species plantations i.e. *Azadirachta indica*, *Dalbergia sissoo*, *Syzygium cumini*, *T. arjuna*, *T. bellerica*, *Embalica officinalis*, *Melia azadirachta*, *Accacia nilotica*, *Morus alba*, *Ailanthus excelsa* etc. The eucalyptus plantation has been raised mostly in strips and established on river banks and along the roads. Proper planning and whole hearted participation of the community has resulted in high survival rate (90-95%) of the plantations.

1.3 Soil Moisture and Conservation Work

At most of the sites, the plantations were carried out by ridge and furrow method which is widely accepted and suitable for the areas like Haryana and some parts of the state of Rajasthan. In this system, ridge provides better condition for the growth of planted seedlings and furrows provide moisture during lean period. The structure is best suited for rain water harvesting with the ridge providing good growing conditions for the newly planted seedlings. At some of the sites, cement pillars with barbed wire fencing has also been erected for protecting the plantations from stray cattle. Ridge Plantation done in



Advance Soil Work for *Eucalyptus* Plantation



Luxuriant growth of two and half year old Plantation

January-February-March lead to longer growing periods.

1.4 Use of Improved Technology

Advance agricultural implements like Rotavators and Mechanical Augers and drip and sprinkler, mobile irrigation systems have been used. Such mobile irrigation systems



Use of improved technologies under the project

1.5 Role of Joint Forest Management Committee (JFMC)

Ensuring people's participation under the programme was difficult in early stages of NAP implementation due to the fact that there are hardly any forest villages, whose inhabitants are dependent on forests for their survival. In fact, constituting VFCs itself was a tough proposition in the absence of any tribal population willing to devote time on growing trees and providing protection for their livelihoods. However, the dedicated efforts of the forest officials have resulted in fetching an overwhelming response from the villagers and farmers for the NAP. As a result of the sustained facilitation, 37 VFCs are existing and functional and are taking part in all stages of afforestation including micro-planning, plantation, protection, executing EPA work etc. Today all the 37 JFMC are protecting their forests developed under NAP very well. For compilation of present success story two JFMCs namely Shiwaya and Ramrai was selected for detailed study. The key objective of the compilation is to know the perception of the villagers about the hundred per cent success of plantation and *modus operandi* adopted by them for achieving this herculean task. JFMC wise details are given hereunder:

1.5.1 Role of Shiwaya JFMC in the project

Shiwaya is a small village comprising of 1200 households situated at a distance of 18 kms from the Jind HQ. The village came under the umbrella of FDA in the year 2006-07. The Village Forest Committee was constituted with a total of 11 members in its executive committee. The FDA project was started in the village initiating Entry Point Activity for which an amount of Rs 2,41,650/- was received. This amount was spent in construction of Pucca path at Khulari, Drinking water tank at Railway Station, hand pumps installation, repair of small *pulia*. These assets were created in the village to develop rapport in the area. ***Amongst these, the drinking water tank constructed in Shiwaya Station Yard***

having capacity of 10,000 L apart from providing fresh water to the commuters, also gets noticed for the inaugural stone erected near the tank. The VFC and Forest Department decided to inaugurate the tank in a unique way. The inauguration of water tank was done by the poorest widow women of the village. This innovative step not only created a feeling of ownership amongst the villagers but also developed a strong relationship between the departmental officials and villagers, especially poor ones belonging to lower sections of the society Besides, this 04 sewing machines distributed to girls for providing alternate sources of livelihood was another commendable work selected by JFMC under EPA

At Shiwaya station yard 73.5 ha plantations comprising of 80,300 plants and Shiwaya Minor with 8000 seedlings of different species viz. Trifala, Amrud, Amla, Amaltas, Belpatr, Imli, swanjana, jamun, Siris, Eucalyptus were planted in the year 2006-07. The selection of economically viable species has attracted the participation of the villagers who have volunteered for watering and protection of plantation. According to Shri Pratap Singh, JFMC President, a resolution in general body meeting for protection of plantation areas from illegal encroachment if any, has also been passed The extensive growth of plantation all across the railway line can be seen in figures. A slight difference of temperature was also observed within and outside the plantation area. Villagers happily shared their observations in terms of presence of many native floral species (i.e. Leswa, (*Cordia dechotoma*) Neem (*Azadirachta indica*) and faunal species like Koyal, Jackal, Peacock, Rabbit) which have found their habitat in the plot.



Various activities carried out in Shiwaya village

1.5.2 Role of Ramrai JFMC in the project

Ramrai is an ancient village located on Jind-Hansi Road, 8 km from HQ Jind District in Haryana. The village has a population of about 6740 and the number of households is

around 1153. In the Executive Committee of VFC Ramrai, there are 11 members of which only one is a female. A total of 93.5 ha of Govt., panchayat land, land along roadside has been reclaimed by planting nearly 90,850 plants of different species including Kikar, Eucalyptus, Shesham, Neem, Bakain, and others. As far as the plantation techniques are concerned ridge/pit techniques were adopted to ensure good survival (>90%) and protection of the plantations.



Eucalyptus ridge plantation raised by Ramrai VFC

The study team visited a 42 ha of *Eucalyptus* plantation developed in Panchayat land in the year 2007-08. Mr. Satbir Singh VFC president informed the team that earlier the land was in illegal possession of some powerful families who were using it for agricultural practices. After creation of JFMC under NAP the VFC members along with Forest Department officials socially pressurized the families for eviction of this forest land. The outcome of a number of meetings, peer pressure of society and regular mobilization was that, the land finally got evicted peacefully and thereafter plantation was raised on it. The VFC members recruited Shri Chandra Bhan and Shri Dilbag as caretaker of these plantations. According to VFC member's assessment, a total of Rs. 2.75 crores (55,000 plants were planted considering Rs. 5000/-per tree) will be realized from the plantation on harvesting (after 4-5 years). This instance of peaceful eviction of government land in Ramrai village has set an example for the other forest divisions who are faced with similar situations and has given them an ideal tool for eviction of land from illegal encroachments and initiating plantation activities. It was also informed that the elderly people of the village are using the plantation site for their morning and evening walks. Besides this, the well developed plantation attracts the migratory bee keepers of Himachal Pradesh for installing their bee boxes beneath the plantations. The presence of bees for a while, may be useful for the cross pollination in agricultural crops.

1.6 Overall impact of the work

- Villagers of Shiwaya are a motivated lot from the EPA work done at railway station and other activities being carried out under EPA in their village.

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- Earlier, the soil of the plantation area was unproductive due to presence of kankar pan which now has been converted into a productive area.
 - The water quality has improved considerably and a slight variation of temperature has also been observed by project authority and villagers
 - Initiation of natural regeneration of many native species like leswa, Neem (*Azadirachta indica*) has brought in movement of faunal species Koyal, Jackal, Peacock, rabbit in the area.
 - Mixed plantations have improved the ground conditions thereby helping propagation and natural regeneration of native species.
 - Fruiting has commenced in guava and amla plants and this may provide an alternate source of income for the villagers
 - Plantations growing on both sides along the link road of Ramrai village not only have increased the aesthetic view but also provide shade to the weary travelers and the villagers.
 - Possibilities of illegal encroachment along the canal bunds have been minimized due to plantations. Plantation also reduced the chances of surface erosion.
 - The migratory bee keepers of Himachal Pradesh and other states now camp in the *Eucalyptus* and Neem plantation areas for better quality of honey. This will also improves the crop production of cross pollinated crops.

Impact of the work



Pre Project Scenario



Pre Project Scenario



Post Project Scenario



Post Project Scenario



Mix plantation: Source of income



Greenery along road-Side



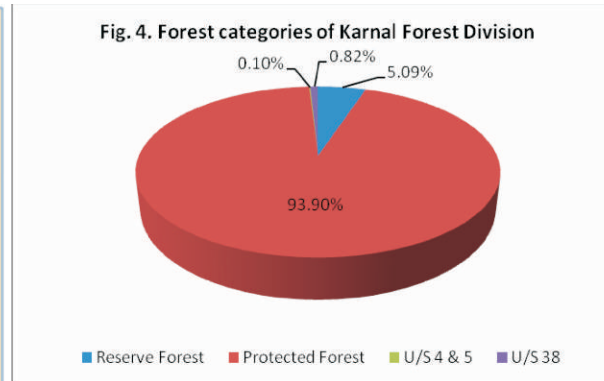
Potential site of migratory Bee keepers



Restoration of birds habitat

2. KARNAL FOREST DIVISION

Karnal Forest Division comprises of the entire district of Karnal, which is bordered by the river Yamuna in the east and districts of Panipat in the south, Kaithal in the west and Kurukshetra in the north. The Division has a total geographic area of 2475 sq. kms distributed in three Forest Ranges namely of Karnal, Indri and Assandh. Like other districts of the State of Haryana, the area under forest of Karnal is a meager 7587.12 ha which is only 3.85% of total geographical area. This has been categorized into 386.75 ha in the form of block/compact plantations (Reserved Forests) and 7130.19 ha in the form of strips on Government lands alongside roads, railway-lines, canals and drains (Protected Forests).



2.1 Initiation of FDA Project

The NAP was started in the year 2007-08 in Karnal Division with a total target of rehabilitation of 1030 ha degraded land through participatory approach or as envisaged under Joint Forest Management. The degraded land under government, forest, community and panchayat land has been taken up under the project. As per the JFM concept and to ensure the community participation, a total of 39 Village Forest Committees (VFC) have been constituted in all the three Forest Ranges. The main work which are being carried out under the VFCs are Artificial Regeneration, Entry Point Activities, Micro-planning, Monitoring and Evaluation. Though, there are more than ten species that have been used in the project, yet majority of these plantations have been undertaken with *Eucalyptus* for growing in maximum area which is either low lying or waterlogged. This is mainly because *Eucalyptus* is one of the best available fast growing timber species. **During interaction with farmers this species was found to be acceptable to farmers as this is likely to yield maximum revenue to them.** Besides this, *Eucalyptus* is a non-palatable species and it can withstand water logging created by planting paddy.

2.2 The problem

Being a developing district of the state, around 385.03 ha forest land has been diverted for different projects under FCA 1980. Another problem has been that, the strip forests are all along adjoining farmland and the terrain is level and flat and in continuity with agricultural land. Due to this, the farmers tend to extend their agricultural fields into the strip forest areas. Over past several years, the farmers have been in adverse possession of substantial protected forest areas adjacent to their agricultural fields. In view of the development needs for providing civic facilities to the society and to sustain the existing level of tree cover/plantations, the only way out is to reclaim the strip forest land from the adverse possession of these farmers. The traditional method of forcible dispossessing the farmers by invoking the provisions of laws and acts are not expected to yield desired results for under-mentioned reasons:

The encroached forest land along the strip forests is of narrow width and runs for very long distances. It is not possible to have physical barriers separating such forest lands from adjoining agricultural lands. Even if the farmers were dispossessed unwillingly for once, it would not have been possible to prevent repeated re-encroachments because the only available option with the Forest Department in order to sustain possession of reclaimed forest land was by way of raising successful plantations on this land. For doing so, the cooperation of the farmers who were to be dispossessed from the land was essential because the plantations take number of years to mature and there are number of ways and means available with miscreants to ensure failure of such plantations on such lands where Forest Department has scarce human and material resources to maintain the plantations

2.3 Eviction of illegally encroached land

Shri Navdeep Hudda, Divisional Forest Officer, Karnal, shared his experience of a practical method adopted by his team and JFMC members by creating an atmosphere and social opinion so that the farmers enjoying adverse possession of forest lands realized their social responsibilities to willingly restore the possession of forest land to the Forest Department.

Thereafter the problem of dispossessing the defiant and recalcitrant be addressed by resorting to lawful enforcement measures. Entire eviction process was completed in participatory mode for which a number of open meetings were organized by the forest officers of the Division. The encroached land though was very precious to the farmer's, but they were finally convinced and agreed to leave the encroached land. It's a great achievement of all the officers and JFMC.

In the entire process, the GO issued by the Haryana Govt. under the title ***“The Apportionment of Tree Rules 1987”*** has proved to be a milestone and has had a great

impact. Under this rule, a provision has been made for *sharing the trees of one row between the Govt. and the farmers whose cultivated land is located adjacent to the strip forests of roads, railway lines, canals and drains at the time of final felling of trees.* The main objective of this rule is to compensate the farmers against decrease in food grains yield caused by shade of trees. The GO has effectively percolated upto the JFMC and farmers. This has not only compensated for the loss of forest areas diverted for non-forestry purposes but also has added to the overall environment, greenery and aesthetics of the poorly forested district of Karnal.

2.4 Plantation on evicted land

The only applicable technique of regeneration of evicted forest land is the “Ridge Planting Technique”, which has been used under the National Afforestation Programme. In this technique the construction of ridges is mainly done in the months of May-June and the planting is mainly done during the monsoon season. The main benefits of Ridge planting technique are (i) the roots of plants get sufficient loose soil which helps in early establishment of plants, (ii) initially, the roots of plants remain free from water-logging resulting in less damage to plants, (iii) the rain water collected in the trenches, which are formed on both sides of ridges due to lifting of soils, is available to the plants for a long duration and (v) the trenches help in water conservation.



Plantation raised on evicted land

2.5 Impact of the work

So far a total of 724.20 ha area has been peacefully evicted from adverse possession of farmers and successful plantations have been undertaken on these lands, of which more than 55% has been reclaimed through NAP (Table 1). The high survival of plantation depicts the extent of social fencing and involvement of local community/farmers in plantation and protection measures.

Table 1. Reclamation of illegally encroached land under various VFCs

S.N.	Name of the VFC	Total area evicted (ha)	Models adopted	Survival percentage of plants
1	Hasanpur	47.01	Ridge/Tree planting	90
2	Dachar	68.9	Pit/ Ridge/Tree planting	75
3	Bandrala	46	Pit /Tree planting	80
4	Pincholia	11.5	Pit/Tree planting	70
5	Chaprio	19	Pit/ Ridge/Tree planting	85
6	Dadupur	26	Pit/ Ridge/Tree planting	85
7	Bodshyam	30	Pit/Tree planting	80
8	Suhana	15	Ridge	90
9	Kunjpura	11	Pit/ Ridge	85
10	Bara Gaon	7	Tree planting	80
11	Hassanpur	15	Ridge	90
12	Chura	18	Tree planting	80
13	Khora kheri	1	Ridge	90
14	Munak	21	Ridge/Pit	85
15	Bondrala	5.8	Tree planting	95
16	Picholia	28	Pit/ Ridge/Tree planting	90
17	Chaprio	6	Tree planting	86
18	Dadupur	29	Pit/ Ridge/Tree planting	90
19	Bodshyam	7	Tree planting	95
20	Budanpur	10	Pit/ Ridge/Tree planting	90
	Total	402.21		



Plantation at evicted encroached land

2.5.1 Natural regeneration of native species

Natural regeneration of native *Dalbergia sissoo* in furrows is a good sign for the well being of environment. It is expected after felling of *Eucalyptus*, the area will not be devoid of green mass due to precious Shisham forest.

2.5.2 Promotion of agro-forestry practice

Once the land is taken back from the farmers and restored to forestry, farmers are able to see for themselves, the effect of trees growing near their lands and taking the shape of a forest within a few years. Motivated by this, they also get tempted to go for agro forestry. Earlier the department had made lots of efforts to promote agro forestry but did not succeed. But now, the demand of planting material especially Eucalyptus and Poplar has increased considerably and it is growing day by day. Agro forestry not only benefits the farmers commercially, but also increases the wood budget of the state and this finally helps in reducing the pressures on natural forests.

2.5.3 Increase of wildlife

The farmers observed that after plantation the presence of tree fauna, reptiles and small mammals has increase in the area which contributes towards the benefits of wildlife.

2.5.4 Economic Benefit

The farmers are getting 50% share in the first row of trees standing adjacent to their cultivated fields and the community is collecting grasses and fuel-wood free of charge from the forests.

Learning and Suggestions

- Although the work carried out in both the Divisions covered under the documentation has significant impact of bringing more land under forest cover but the livelihood needs of locals may be fulfilled under the programme by creating village development fund, promoting SHGs and adequate capacity building of the JFMC members and frontline officers as well.
- As multiple species like. Amla, Jamun, Guava, Neem etc. have been raised, efforts must be made for value addition and marketing of forest produce.
- Limited money has been provided under EPA which this needs to be increased.
- The approved plantation models and cost under NAP guidelines needs to be revised based on location of the area.
- Women participation should be promoted.

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