STRATEGIES FOR SUSTAINING JOINT FOREST MANAGEMENT – LESSONS FROM TAMIL NADU AFFORESTATION PROJECT, INDIA[1]

C.K. SREEDHARAN* AND JAGANNADHA RAO MATTA**

Tamil Nadu Forest Department,
Chennai (Tamil Nadu).

Introduction

Forest degradation is a major problem for India, where forestry is the second largest land-use after agriculture. While about 275 million people in rural areas depend on forests either wholly or partially for their livelihoods, a majority of them living in forest fringes are among the poorest and most vulnerable groups in the society. Recognizing the role of forests in ensuring the environmental and economic stability of rural communities, the Government of India (GoI) enunciated the 1988 National Forest Policy that subsequently enabled the adoption of Joint Forest Management (JFM) programme (GoI, 1990). This policy change shifted the emphasis on the use of public forests from commercial exploitation to more towards the socio-economic needs of local people (Khare *et al*., 2000). JFM enabled meeting such needs by providing institutions for regulating access to, and promoting management of, state forests jointly by the local community groups and the state forest departments. Thus, JFM is essentially an institutional mechanism to promote local people's participation for sustainable use and management of forest resources.

The JFM approach has become a dominant paradigm in India, having received considerable impetus from policy makers, foresters, and donor agencies in recent years. As of 2005, the area under JFM exceeded 27% of national forest area across 27 states. With more than 85,000 Village Forest Councils (VFCs) established to manage forests at the community level, the JFM is recognized as one of the largest participatory forest management programmes in the world (Kumar, 2002). Despite JFM's popularity as a policy with potential ecological and social benefits (TERI, 1998; Datta and Varalakshmi, 1999), concerns are however simultaneously expressed over the sustainability of this approach (Lele, 2000; Sundar, 2001). JFM's performance was also found to be highly varying when applied in wider scale and broader contexts (Jeffery and Sundar, 1999).

From local communities point of view, three aspects particularly distinguish JFM

*Principal Chief Conservator of Forests
**Deputy Conservator of Forests

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from earlier management approaches. The first is the notion of 'community control'; in other words, people living in the community are closely involved in deciding how the forest is managed. The second element is 'local benefit'; that the benefits generated from the forest, be they economic or social, are mainly meant to benefit the local community. JFM strategy in India is particularly built on the notion that local communities can help protect and regenerate forests if they are suitably compensated with resultant forest products. Finally, 'sustainable management' – that the forests are managed to ensure their long-term ecological health and productivity and their ability to meet local people's socio-economic needs in the long run. These three aspects are in turn interrelated, as the benefits available to local communities are very critical in ensuring their involvement in forest management and in sustaining JFM over the years.

In highly productive areas with relatively low population, the needs and interests of villagers can be fairly met through the forest products obtained from JFM, as has been envisaged in the policy, as adequate returns to investment can be achieved. Operation of such a self-paying incentive mechanism could also be reasonably simple and sustainable. On the other hand, the involvement of local people and sustaining their interest in management is more complicated when the benefits are not high, immediate, or widely distributed (Kerr, 2002). This normally is the case when JFM is introduced to improve degraded forests such as in Tamil Nadu. This limitation poses significant challenges to sustain local people's interest in forest management. This predicament also requires designing innovative approaches to sustain the programme in villages.

The objective of this paper is to provide insights on potential institutional and financial strategies to promote participatory forest management. The observations are particularly relevant to situations where forest productivity is initially a major challenge to implement JFM. An in-depth analysis of implementation of this policy in Tamil Nadu State in India provides the basis for the observations made in the paper. The findings of the study will also be useful to identify appropriate institutional remedies to effectively implement JFM elsewhere in the country.

Forests and their Significance in Tamil Nadu

Forests constitute 17.6% of the total geographical area of Tamil Nadu compared to 23.4% for India as a whole. The per capita forest area in the state is a meagre 0.04 ha, half that of the national figure. In recent years, these forests have been exposed to further degradation. With an estimated 100,000 villagers entering into them for various consumptive uses, and about a million cattle and other domestic animals grazing inside without restriction, the biotic pressure on these forests is immense. According to an estimate, about 0.7 million tonnes of fuelwood, 0.13 million tonnes of fodder and green manure, and 10,000 m^3 of small timber are annually removed from the forests. As a result of these pressures alone, about 25,000 ha are estimated to be getting degraded every year (TNFD, 1997).

From an ecological point of view, however, these forests are of immense

value to the state, which is located in a rain shadow region. The average annual rainfall is about 860 mm and droughts are common. Forests are located in critical catchments for a majority of the 32 river systems, 11 major reservoirs, and 38,863 small reservoirs. The dependence on groundwater resources for drinking and agricultural uses is one of the highest in the country. Barren land at the start of the rainy season results in reduced moisture infiltration leading to lower groundwater tables, even depriving people of drinking water in several places. In recent years, groundwater tables fell steeply and about half of the state was observed to be in "absolute water scarcity" (TERI, 1998), the highest water scarcity condition in the country.

Implementing Tamil Nadu Afforestation Project (TAP) with JFM

In the past, restoring degraded forests was mostly confined to raising block plantations with little public involvement. In order to augment forest production and to reduce pressure on reserved forests, production forestry was later extended to community lands and private areas under Farm Forestry and Social Forestry schemes, and local people's involvement was achieved to a limited extent (Andersen, 1995). These schemes however paved the way for promoting forestry extension, agro-forestry, and interactions with other government agencies in the forestry sector. Later, in the late 1980s, Interface Forestry was introduced with the aid of Swedish International Development Agency. This programme particularly led to the establishment of Village Forest Committees with responsibilities for forest protection and rights over ensuing benefits (Sreedharan and Sarkar, 1998). Thus the Interface Forestry approach brought a significant change in how the problems related to restoring degraded forests are addressed. The programme also made apparent the benefits of involving local communities in forest management. It however could not be sustained in the long run, as the benefit flow to the participating villages was low (Annamalai, 2003). A comprehensive approach was thus needed to address the root causes of degradation: poverty among forest fringe villagers that lead to their indiscriminate use of forests, and poor productivity of forests that cannot withstand such intensive use.

The Current JFM Strategy : JFM was initiated in Tamil Nadu with a theme of "save the forests to save the water," as part of a $100 million Tamil Nadu Afforestation Project (TAP) in 1997 under the Japanese Overseas Economic Co-operation Fund [earlier known as Japanese Bank for International Cooperation (JBIC)]. Of the 3000 villages abutting the 7000 km^2 of severely degraded forests (having a crown density of 0.4 or less, compared to a good quality forest area with a crown density of 1.0), JFM was initially introduced in about 1000 villages.

The current JFM approach to restore degraded forests primarily focused on two aspects :

(1) enhancing the productivity of the resource base and
(2) supporting the socio-economic improvement of forest fringe villages.

While the former tries to address the supply side of the challenge by providing more forest produce and other tangible benefits from forests, the latter endeavours to reduce pressure on forests from villagers. Earnest efforts were put in to improve the

degraded forests in a systematic manner. These included prioritising forests on the basis of their degradation, identifying appropriate species and silvicultural treatments, and implementing the programme on a "micro-watershed basis" using advanced technologies such as GIS, application of bio-fertilizers, etc. Necessary soil and moisture conservation measures were also included as a comprehensive package to improve forest regeneration and surface and ground water levels. In about 8 years (1997-98 to 2004-05), Rs. 4261 million (US$95 million) or about 84% of the project funding was invested in afforestation and watershed improvement to restore 0.48 million ha of degraded forests.

In view of the need to protect and maintain the restored forests, local management committees (VFCs) were constituted under JFM. The VFC was given authority over regulating access to forests, resolving intra-village conflicts, and in ensuring equitable distribution of benefits. As an incentive to the participating villagers, like all other JFM initiatives in the country, the Tamil Nadu JFM provided usufruct rights over forest products to VFCs. All the forest produce such as fuel, fodder, green manure, and non-timber forest products (NTFP) that could be harvested from the restored forests on a sustainable yield basis went to VFC members free of cost (with a priority to the poor and landless). The sale proceeds of any surplus produce sold are distributed equally among VFC members after remitting 25% of it to a specially constituted fund called "Village Development Fund" (VDF) (GoTN, 1997). During the above project period, 1367 VFCs were formed with 465,588 villagers as members.

JFM Outcomes : Several local and regional studies indicate significant positive impact of JFM on the local ecology. Large-scale soil and moisture conservation activities undertaken have not only checked erosion and impounded water, but also revived many natural springs (Business Line, 2000). With 23,454 checkdams and 2201 percolation ponds constructed for water harvesting in various places, an additional water storage capacity of about 800 million cft was created in the state. In 20 of the sample watersheds, an increase of 3.8% to 14.2% in ground water table was recorded (Sreedharan, 2002). Positive changes were also observed in cropping patterns and agricultural yields due to effective utilization of the increased moisture by farmers in several project areas (Neelakantan, 2000).

Heavy investments made in forestry and water harvesting, and protection of plantations achieved through the active involvement of villagers were attributed as the major reasons for this improved performance. The programme also generated about 60 million human-days of employment in the form of nursery and regeneration works in project villages, thereby considerably reducing migration of villagers to cities. Further, the people's institutions led to substantial collective action in the villages resulting in strict forest protection. Significant reductions in goat population, cattle grazing, wildfire occurrence, and forest encroachments were also recorded in JFM implementing villages (TNFD, 2002).

Strategies to Sustain Joint Forest Management

As detailed in the preceding section, the incentives available to VFCs for their

participation in JFM are primarily the forest products and their sale proceeds maintained as VDF. However, despite the resurgence of vegetation, the degraded forests could not produce significant quantities of forest produce for harvesting by any of the VFCs in the state. The areas under JFM are characterized by very little topsoil, low nutrient availability, and severe soil compaction caused by decades of cattle movement. Also, there is considerable gestation period involved for the forestry project to yield substantial results. In the project period of 8 years (1997-98 to 2004-05), the communities harvested 2526 metric tones of NTFP worth $149,000 or about Rs.14 or less than $0.33 per member (TNFD, 2006).

If the present JFM were structured solely to sustain on forest products, it would have met the same fate like that of the earlier approaches. To avoid recurrence of such failures, systematic efforts were taken from the beginning itself, to make JFM financially viable to villagers and to place the policy on a firm ground. Some of these measures are in progress, and are evolving, in accordance with the changes that are occurring in the broader natural resource policy arena in India and elsewhere. These are described in detail below.

According VFCs the Status of Registered Societies : In order to provide the VFCs necessary legal status and certainty in their functioning, they are registered as societies under the Tamil Nadu Societies Registration Act, 1975. Implementing the programme in the form of societies provided the needed flexibility for raising funds and investing them for various asset creation and socio-economic development. This measure also allowed effective community involvement and systematic benefit sharing. Besides facilitating innovation, the society mode permitted incorporation of changes in response to emerging needs and experiences.

Provision of Seed Money to VFCs from the Project : In view of the long gestation period involved in harvesting any substantial forest products out of JFM, the project provided Rs. 300,000, Rs. 200,000, and Rs. 100,000 in the first, second, and third years respectively as seed money to the VDF. The VDF, maintained by the VFCs, is meant to serve as an incentive to the participating villagers. About 70% of the VDF is spent on individuals or small groups dependent on forests to provide them with alternative employment opportunities. The balance 30% of the VDF was used for general development activities that benefit the village as a whole. These activities included laying village roads, providing drinking water facilities, and construction of community halls, etc. These are undertaken to build necessary rapport between forest department and villagers and also to instil confidence among villagers in the programme. About Rs. 840 million or 16% of the project money was spent on both the individual and village-level development activities (as mentioned earlier, 84% of the project money was invested in afforestation and water harvesting).

In the absence of significant forest products, village development assistance proved to be a major attraction to the villagers. Compared to other areas in the state, the JFM villages historically lagged in several basic necessities. The onset of JFM provided a major opportunity for local leaders to help remedy the situation. Several villages came forward to take up the onerous task of forest protection,

anticipating some developmental assistance. In a random survey of select JFM villages, about half of the respondents said that obtaining more of the developmental benefits was their primary recommendation for improving JFM (Matta *et al*., 2005). Some entrepreneurial VFCs built community halls and other common facilities and rented them to public to ensure a steady supply of income to make the programme sustainable. These instances indicate the kind of enthusiasm and interest this component has generated among local people in JFM.

Establishing Self Help Groups and Promoting Micro-Credit : Capitalizing on the Community Driven Development approach, wherein the community member identify their own needs, design and plan interventions, and implement and monitor them in small, homogenous groups, about 3,891 Self Help Groups (SHGs) were established in JFM project villages in the state. Similarly, extensive alternative employment opportunities were provided to the forest dependents after systematically identifying their needs and skills through PRA and RRA exercises. The main objective of these efforts is to wean away forest dependents from destructive forest use practices and to rehabilitate them with viable livelihood opportunities. As mentioned earlier, about 70% of the money meant for socio-economic development activities was spent on this component.

A key feature of this component is that the money available for supporting individuals or SHGs is constituted as a revolving fund and is invested on a micro-credit basis. That is, the funds given to them by the VFCs need to be returned to the VFCs along with interest. Then the money is again advanced to other needy individuals or SHGs. Thus the smooth rotation of this corpus fund among identified villagers forms the crux of the program and in turn determines its sustainability. About US$12 million was invested in this micro-credit financing mechanism during the project period. Observations made by the state forest department indicate a moderate level of success achieved in managing these funds by a majority of the VFCs. TAP has, however, just started; so more time is required to achieve significant results in this component.

Another key feature of this component is the 'pro-poor' and 'pro-women' emphasis the programme places in JFM implementation. In both the individual and SHG support activities, building skills and capacities of rural poor and women was given top priority. Women in rural areas are the major forest stakeholders, acutely dependent on forest resources such as fodder, fuelwood, and NTFP and forest-based employment round the year. They also have the reputation of being good custodians of family values and traditions in rural India. In recent years, they have even proved to be skilful entrepreneurs and money managers. Hence they were given a prime place in micro-finance enterprise development, asset building, and skill improvement through special trainings and institutional linkages. At the end of the project period, there were 3,891 SHGs with 60,097 women members trained in various income generating activities.

Enabling Inter-sectoral Linkages and Additional Development Investment : Interest in JFM in low productive forest areas also gets diminished if the local people have other profitable land uses.

This is particularly so in the context of current global market dynamics and associated pressures, which are bringing about fundamental changes in community characteristics, traditions, and livelihoods. These transitions greatly influence local people's need, ability, vision, and willingness to work collectively for forest management – especially when the public good value of the effort is high and immediate benefit to local individuals is low. These observations highlight the need for alternative institutional approaches that go beyond the provision of forest products as incentives to villagers. As mentioned earlier, many JFM villages are located in interior areas and a major demand of these villagers was better government services and infrastructure. They range from simple needs such as getting ration cards to laying roads. In order to meet these demands, the forest department obtained special government orders to involve district level officials in JFM. A state level committee was also constituted to monitor and guide the implementation of this inter-sectoral integration policy for JFM.

Pursuant to this measure, many government agencies such as Rural Development, Social Welfare, Agriculture, and Transportation dovetailed part of their activities to JFM. In the past eight years of TAP implementation, about US$13.6 million was invested in 1113 project villages involving about 22 government departments in an unprecedented manner. This works out to about US$12,000 per JFM village. This is in addition to about US$14,000 directly invested by the forest department. Further the Tamil Nadu Adi Dravidar Housing and Development Corporation Limited (TAHDCO) promised $0.22 million investment in rural areas abutting forests to poverty alleviation and reduction of forest dependency. The department is also working on getting funds for the above activities under Tsunami Reconstruction project and Pudu Valzhvu (a World Bank aided poverty alleviation programme implemented by the Tamil Nadu State government).

Encouraging Corporate Investments in Forestry : Public-Private partnership is gradually emerging as a strong force to augment investment opportunities in forestry and environment sectors. One such notable example is the TVS Group of Industries joining hands with the state forest department to reforest some of the degraded forest areas in the state through VFCs. The TVS Group, a flagship automobile industry in the state, has made significant contributions to JFM through its social services wing (Srinivasan Services Trust) in Vellore and Tiruvannamalai districts (TERI, 2002) and intends to adopt 50 more VFCs. Similarly, M/s. India Potash Limited, another corporate body has proposed to invest in the production of Jatropha, a bio-fuel species in degraded areas through the JFM mechanism. In addition, plans are afoot to obtain funding from National Bank for Rural Development (NABARD) to support investment in forestry in rural areas. At the local level, JFM villages also have tie-ups with local commercial banks and other professional development institutions.

Extending TAP and Integrating JFM with other Forestry Projects : Since omitting certain degraded forest areas has serious consequences to the overall sustainability of the program, efforts were also taken to expand the area under TAP and to integrate it with other forestry programmes. The need for extending

development assistance to VFCs beyond 3 years as a way of sustaining JFM was also suggested by Somasundaram and Sreedharan (2003). One of the consequences of implementing JFM in a few villages is that the cattle from JFM villages move to nearby non-JFM areas. This will accelerate forest degradation there and also lead to increased conflicts among JFM and non-JFM villagers. To minimize such instances, TAP was extended to 1,367 villages in the first phase with a total investment of US$150 million. To consolidate the gains made in this phase and to cover additional areas, phase II of TAP was also launched in the state. This second phase is intended to cover about 800 villages with a budget of US$120 million over a period of 8 years from 2005 (TNFD, 2006). The major focus of this phase is to build capacity and improve the livelihood opportunities of forest stakeholders.

The National Afforestation Programme (NAP), a programme of the GoI commenced in 2002 involving local communities in forest protection and conservation through Joint Forest Management Committees, is also being implemented in tandem with TAP in the state to ensure maximum synergy between these two programmes. Currently the NAP covers about 1140 villages to improve about 53,000 ha of forest area with an outlay of $20 million.

Exploring Opportunities for Environmental Service Payments : Forest restoration and improvement also provides several environmental benefits such as climate regulation and watershed protection. Local communities participating in JFM could receive incentives for provision of these services and thereby potentially enhance the financial viability of their functioning (Matta and Kerr, 2006). Such benefits of JFM in Tamil Nadu come in several forms and have their effects at local, national or international levels. At the international level, forest conservation and regeneration sequesters carbon and helps to stabilize the global climate (Verweij, 2001). At the regional level, the JFM areas in Tamil Nadu are critical catchments for major rivers, reservoirs, and irrigation tanks (TNFD, 2003). It is well known that improved vegetative cover stabilizes soil and increases the infiltration of water into the ground, thus increasing soil moisture and reducing siltation of downstream water bodies. In addition, the forests of Tamil Nadu, particularly those dotting the Western Ghats, are home to significant biodiversity (Menon and Bawa, 1997). At the local level, soil and water conservation activities undertaken have improved agriculture.

Payments for environmental services programs, while just initiated in India, are spreading elsewhere in the world. In Costa Rica, for example, upstream landowners receive payments for watershed protection and carbon sequestration, with a national agency working as an intermediary to reduce transaction costs (Pagiola *et al.,* 2002). In Ecuador, downstream municipal water utilities pay upstream forest communities to protect the water supply (Echevarria *et al*., 2004). In South-East Asia, the Rewarding Upland Producers for Environmental Services (RUPES) programme employs a variety of rewards systems (ICRAF, 2003). Developing institutional arrangements to receive such funding for provision of environmental services by local communities is in need of continuous innovation (Pagiola *et al*., 2002).

The state Forest Department has set up a special cell to develop comprehensive proposals to access carbon market so that additional money is available to JFM communities.

Training, Capacity Building and Imparting Attitudinal Change : The JFM policy will be able to sustain in the long run only if the skills and capabilities and the attitudes of all those required to implement it are also simultaneously transformed to suit the changed work conditions (Matta *et al*., 2005). In other words, there should be a "shared understanding" of the principles and approaches of JFM across all stakeholders to make this policy work in the field. Heavy investments in forestry and large-scale watershed development, and increased involvement of stakeholders, also needed acquisition of new tools, techniques, skills, and procedures. In addition, the new situation required the staff to engage in a host of social activities such as awareness creation, negotiation, coalition building, and conflict resolution. Hence to make the program sustainable, appropriate training, capacity building and attitudinal change measures were undertaken for forest staff, villagers, community leaders, non-governmental organizations and other development functionaries.

Discussion and Conclusions

Since Hardin's article on the "Tragedy of Commons" (Hardin, 1968), the role of 'effective institutions' in regulating the use and management of natural resources for their viable stewardship has received vital prominence (Ostrom, 1990). An innovative measure taken up by the GoI in this direction is the launching of JFM to involve local village stakeholders in forest management through Village Forest Committees. Current literature indicates that the JFM approach has halted degradation of forests (Kumar, 2002) to a considerable extent. The problem, however, seems to be in ensuring the programme's sustainability in the absence of some immediate and tangible benefits to local people. This is particularly challenging when JFM is implemented to improve degraded forests.

In this paper we discussed some of the institutional and financial approaches that could potentially help improve the sustainability of JFM based on an in-depth study of this programme in Tamil Nadu. These approaches focus on :

(1) Stronger rights and responsibilities for local forest management,
(2) Effective institutional measures targeted toward rural poor and women,
(3) Improved sectoral integration and flow of developmental aid, and
(4) Flexible and more effective organizations.

These are being implemented under the presumption that forest improvement offers vast potential for poverty reduction and rural economic growth while simultaneously meeting critical national conservation goals. JFM experiences elsewhere indicate that on site, tangible benefits of afforestation could be realized in as early as 20 years. For example, in Sukhomajri, India, the initial impetus for investment was saving Sukhna Lake downstream in the city of Chandigarh through afforestation and soil and moisture conservation. However, due to high on site benefits of these efforts, Sukhomajri was transformed from a very poor village to a

very rich one. In this small village of about 1000 people, milk sales reached about US$8,000/yr, bhabbar grass fetched about US$3,000/yr, crop yields soared and the economy diversified. Tree density rose by about 100-fold over twenty years with an estimated annual potential yield worth US$700,000 Agarwal (1999) through their harvesting. Sukhomajri is perhaps a unique case and such high benefits may not be expected everywhere. But this case illustrates the financial potential of a sound forestry enterprise. The experiences of eco-development projects in India (Pandey and Wells, 1997; Chopra, 1998) and elsewhere (Brown *et al*., 2002) suggest that provision of development incentives to local people to ensure their interest in forestry while the forest is recuperating, could be a viable venture.

While there are always some hurdles in using development interventions as incentives for conservation, it would be possible to make this mechanism work if the payments are made contingent upon conservation performance shown by villagers. It is this "conservation contracting" (Ferraro, 2001), approach that ultimately leads to vesting considerable responsibility in the hands of local communities. Simultaneously, formation of SHGs, strengthening micro-credit and income generation, and ensuring women's empowerment would lend necessary strength and capacity to these local institutions to manage forests effectively. We hope that the ideas presented in this paper will set the stage for a new thinking on sustaining local resource management through JFM in India.

SUMMARY

Joint Forest Management (JFM), a co-management programme between government Forest Departments and local people, has been hailed as a successful strategy in arresting forest degradation and promoting socio-economic development of forest fringe villages in India. Sustaining the programme, however, was found to be a major challenge in the absence of lasting institutional mechanisms and regular income flow to the participating communities. The Tamil Nadu Afforestation Project (TAP) addressed these challenges by focusing on (i) providing stronger rights and responsibilities for local forest management, (ii) developing specific institutional measures toward empowering rural poor and women, (iii) ensuring improved sectoral integration and flow of additional developmental assistance, and (iv) promoting flexible and effective programme implementing organizations and stakeholder capacities. These approaches and their outcomes are discussed in the paper.

संयुक्त वन प्रबन्ध को टिकाऊ बनाने की समरनीतियां–तमिलनाडु वनीकरण परियोजना, भारत से मिले पाठ

सी०के० श्रीधरन् व जगन्नाथराव माट्टा

सारांश

संयुक्त वन प्रबन्ध को जो कि सरकारी वन विभागों और स्थानीय जनता, दोनों का सहप्रबन्धन कार्यक्रम है, भारतवर्ष में वन व्याह्रास को रोकने तथा वनों के साथ लगते गावों का समाजार्थिक विकास प्रोत्साहित करने की सफल समरनीति कहकर प्रशंसित किया गया है। स्थायी सांस्थानिक यंत्रक्रिया और भाग लेने वाले समुदायों को नियम से आमदनी मिलती रहने का अभाव इस कार्यक्रय को दीर्घकाल तक टिकाए रखने में एक बड़ी चुनौती के रूप में देखा गया। तमिलनाडु वनीकरण परियोजना ने (i) स्थानीय वनों के प्रबन्ध में लोगों को ज्यादा मज़बूत अधिकार और दायित्व सौंपकर, (ii) ग्रामीण गरीब लोगों और महिलाओं को सशक्त बनाने के लिए विशिष्ट

सांस्थानिक उपाय विकसित कर (iii) सेक्टर के एकीकरण में सुधार सुनिश्चित बना और अतिरिक्त विकास सहायता दिया जाना बढ़ाकर, तथा (iv) लचीले एवं प्रभावकारी कार्यक्रम क्रियान्वयन संगठनों और हितधारियों की क्षमताओं को प्रोत्साहित करके इन चुनौतियों का समाधान निकाला है। इन दृष्टियों और उन्हें अपनाने पर उनसे मिले परिणामों का विवेचन इस अभिपत्र में किया गया है।

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