Post Project Sustainability of Watershed Programme - a continuing challenge

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Introduction

The watershed approach has aimed at treating degraded lands with the help of low cost and locally accessed technologies through a participatory approach that seeks to secure the close involvement of the user-communities. The concept of participatory watershed management emphasizes a multi-disciplinary and multi-institutional approach. The process begins with the management of soil and water, which eventually leads to the development of other resources. Human resource development and large scale participation is essential since finally it is the people who have to manage their resources.

The participation of people has not yet been up scaled to the expected level. Secondly, the maintenance and sustainability of physical structures remain elusive despite the fact that this was one of the main goals of the revised approach based on participatory mode. In other words, in spite of the availability of various operational mechanisms and institutionalization of participation the various structures for natural resource management continue to remain one of the main concerns. Another issue of equal importance was that of sustainability of social structures namely various community-based organizations like SHGs, UGs and WA/WCs. These apart, the modalities of mechanisms provided for taking care of these concerns such as revolving fund, development fund etc. have not been adequately operationalised. It is against this background the importance of appropriate strategies for post-project sustainability assumes significance. Case studies of initial watersheds, which were completed, have however shown that post-project sustainability continues to be a challenge. MANAGE experience in its action research project in Manchal watershed has highlighted this reality. Studies elsewhere and reflections and impressions of the practitioners in different parts of the country corroborated the missing element in watershed management i.e. post-project sustainability.

There is a need for a study on attempts made towards post-project sustainability, analysis of the various strategies and initiatives undertaken in respect of some of the successful and sustainable projects. This would go a long way in operationalizing the

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watershed projects thus contributing to the ultimate goal of sustainable development through sustainable institutions and processes.

Objectives

(i) To identify the various strategies and initiatives implemented under selected projects in terms of their mechanisms, operations and processes.

(ii) To assess the extent of sustainability of various components under the projects.

(iii) To suggest measures for sustainability and exit strategy for watershed projects.

Methodology

The present study is an attempt in this direction and has been carried out in selected projects in the states of Karnataka and Maharashtra. Under these projects a number of initiatives have been taken up for the sustainability of different watershed components and mechanisms and analysis of the same would be useful in deriving lessons for replication. Accordingly, Karnataka Watershed Development Society (KAWAD), Karnataka Watershed Development Project (KWDP) in Karnataka and Indo-German watershed development Programme implemented by Water Organization Trust (WOTR), Drought Prone Area Programme implemented by Dilasa Janavikas Prathisthan, Adarsh Gaon Yojana or Ideal Village project in Maharashtra were taken up for the study.

The study deals with assessment of sustainability of major interventions under each component for which project funds have been used. This assessment has been carried out with the help of a cluster of process related indicators identified separately for each intervention. The above assessment has been carried out by adopting PRA tools and an open-ended schedule. The sustainability of each intervention was assessed through qualitative scoring of 'the cluster of indicators' on a three point scale i.e. Green (high level of sustainability); Yellow (average level of sustainability; and Red (low level of sustainability). Final triangulation of the above assessment was done through focused group discussion with experienced persons associated with the project from the initial stage. The functionaries of the projects and the office bearers of community-based organizations were interviewed through an open-ended schedule. Their views were gathered on major interventions of the project. The total number of respondents from each state was seventy-five.

The major interventions studied can largely be grouped under the following four components namely: (i) organization of community; (ii) development of natural resources; (iii) development of livelihoods; and (iv) management of common fund. Details about strong and weak processes associated with major interventions under each component and proposed strategies and processes for improvement are discussed below.

Study findings

1. Sustainability of Community Based Organizations and Para workers

Broadly speaking three types of groups (namely self help groups of women, self help groups of men and user groups), three types of management bodies (namely village development committee in KWDP/ village level federations in KAWAD, federation of village development committees and cattle breeders association) and three types of Para-workers (namely book-writers, livestock Para-workers and Para-workers) were organized / developed under the project.

Table. 1 Sustainability of Community based Organizations and Para workers

Sl. No.	Type of CBOs and Para workers	Ranking of sustainability (R/Y/G)	
		Karnataka	Maharashtra
I.	Self-help Groups		
	a. Women Self Help Groups	G	G
	b. Men Self Help Groups	Y	Y
II	User groups	Y	Y
III.	Management bodies		
	a. Village level federation	G	Y
	b. Cattle breeders association (cluster level)	Y	-
IV.	Para workers		
	a. Book writers	G	G
	b. Livestock para workers	G	Y
	c. Horticulture para workers	R	R
	d. Agriculture para workers	-	Y

The study revealed that by and large sustainability has been consistently high in two interventions namely women SHGs, book writers and livestock para workers. In case of six interventions (namely organization of men SHGs, organization of Village Level Federation, watershed level federations, cattle breeders associations, Para workers (for livestock as well as horticulture), sustainability has been fluctuating from watershed to watershed. The sustainability of user groups has however been consistently low across watersheds. Based upon the analysis of different variables, the following specific sets of processes are identified which may help in achieving high sustainability of various community based organizations as well as Para-workers.

I. Self Help Groups (SHGs)

The SHGs of women have shown consistently high sustainability due to intensive efforts regarding institutional building by adopting credit and thrift as one of the critical agenda. This has been done with the help of locally available book writers. Besides this, adequate attention has been paid towards adoption of income generation activities through revolving fund / bank linkages; monitoring of SHGs regarding maturity on a regular basis, follow up nurturing of groups through Village Level Federation, etc. Men SHGs have shown medium level of sustainability. Even though adequate attention has been paid in institutional building the level of sustainability is medium.

II. User groups (UGs)

The user groups have shown consistently low level of sustainability across watersheds. Most of processes associated with UGs have received inadequate attention. This particularly refers to low attention towards five critical processes namely (i) capacity building for carrying out UG/ Watershed association specific functions; (ii) structural aspect; (iii) financial sustainability, (iv) allocation of user rights and (v) follow-up on nurturing of UGs.

Based upon limited success in the projects as well as elsewhere, the following specific suggestions are made for improving sustainability of UGs: (i) improving the structure of UGs by either organizing them with SHGs modalities or encouraging their members to join different SHGs; (ii) improving the financial sustainability of UGs by either collecting user charges on a regular basis or generating income through alternate sources; (iii) providing follow-up support through federation of UGs at village level; (iv) improving the functioning through adequate investment on capacity building with regard to specific functions to be performed by UGs; (v) Establishing norms for management and sustainability of UGs; (vi) developing memorandum of understanding between Panchayat/ village level federations / Watershed Association and UGs.

III. Management bodies

a) Village Level Federations (VLF)

High consistency in sustainability of VLF was observed in situations where the following three critical processes were adopted. Adequate investment on capacity building of VLF to perform its critical functions namely planning and implementation of developmental works, management of fund; review and monitoring of progress, etc. Improving the structural aspect of VLF at least towards end of the project period which could be done by having membership in its executive committee from only mature

SHGs (of women as well as men), providing space to women as key office bearers of the committee on rotation basis; federation of VLFs at cluster level, etc., improving its financial sustainability through proper management of common fund; linkage with bank; adoption of community oriented income generation activity, etc.

The sustainability of VLF has improved after reforming it by having all members from mature SHGs (of women and of men) and sharing the post of office bearers (president and secretary) by representatives from women SHG and men SHG.

b.) Cattle Breeders Association (CBA)

Sustainability of the above association has been fluctuating from watershed to watershed. Best results have however been obtained where the following processes were adopted.

- Improving the financial sustainability through (i) gradual enhancement in rate of artificial insemination per animal and also increasing the total number of animals through enhancement in its area of jurisdiction; (ii) utilization of its common fund as revolving loan as well as linkage with bank on service charge basis; Reforming the structure of its executive committee (by restricting membership to representatives from mature SHGs and providing space to women representatives as office bearers) on rotation basis
- Enlarging the scope of CBA to carry out not only breed improvement activity but also management of diseases and ailments, provision of feed through bulk procurement, etc. This may be done not only for cattle but also for livestock by converting the CBA into LDA (livestock development association)
- Capacity building of its executive committee on job specific aspects i.e. management of artificial insemination center, health care through Para workers, linkage with developmental departments, management of office records, etc.
- Decentralization of institutional set-up by organizing either a separate village level CBA or by constituting a sub-committee (for livestock) within the framework of existing VLF.

IV. Para workers

Among the various Para workers, book writers (who are meant for organizing community into groups / management bodies) have been found to be consistently sustainable. The sustainability of other Para workers (for livestock as well as horticulture) has been varying across watersheds. Best results for Para workers were obtained where preference was given to nominate those persons who are willing to take it up as a part-

time work at the village level, have a right attitude towards this aspect as reflected by their earlier interest in this aspect, etc., rather than nominating people purely on the basis of academic qualification. Sustainability of Para workers was further enhanced where follow up nurturing was done by involving them during project period for providing specific services (on charge basis to be paid by the community in a tapering manner).

2. Sustainability of Management of Common Fund with CBOs

Sustainability of common fund was consistently high in situations where it was given to Village Level Federations as a grant, which in turn has utilized it as a revolving loan to mature SHGs. This has not only helped in proper recovery of the amount but also in enhancing the financial sustainability of VLF. Besides this, it has become an incentive for leftover members of the community to get organized in SHGs so that in future they would also have an access to the above fund. Likewise it has also helped the immature groups to become mature due to the expectation of the above incentive.

Table 2. Sustainability of Management of Common Fund with CBOs

Sl. No.	Type of CBO	Ranking of sustainability (R/Y/G)	
		Karnataka	Maharashtra
a.	Village Level Federation	Y	G
b.	Cattle breeders association / Dairy associations	G	Y
c.	Women Self Help Groups	G	G
d.	Men Self Help Groups	R	-
e.	User Groups	R	R

On the other hand, low level of sustainability was observed in situations where the common fund was received as a grant by VLF, which in turn has utilized it as a loan to individual members (outside the SHGs). Likewise its sustainability was low where it was given as one time grant (even on contributory basis) to unorganized members of the community.

Develop Linkages with credit institutions

During the project lifetime the PIA and WDT will work to develop linkages with the credit institutions such as the Regional Rural Banks, Cooperative Banks, service area banks, etc. The credit requirements of the watershed should get reflected in the District credit plan. Linkage with credit institutions should be facilitated during the initial years of the project, soon after the SHG/UG has started operating their own credit and thrift activities successfully.

3. Sustainable Development of Natural Resources in Common Land

A total of four types of interventions were made on common land in selected villages under the study. Details about the above interventions and status of sustainability of community-oriented natural resources developed under the project are given in Table 3.

Table 3. Sustainable Development of Natural Resources in Common Land

Sl. No	Major Component / Sub Component	Ranking of sustainability (R/Y/G)	
		Karnataka	Maharashtra
a.	Water harvesting structures	Y	Y
b.	Biomass development:		
	i. Plantation in common land	Y	G
	ii. Natural regeneration	G	G
	iii. Pasture development	Y	Y
c.	Physical infrastructure/ assets		
	i) Training center	Y	Y
	ii) Nursery	Y	G

Three interventions have shown high fluctuations in sustainability across watersheds namely (i) construction of community oriented water harvesting structures, (ii) construction of community hall and (iii) development of composite nursery in government land. In Maharashtra two interventions have shown high sustainability i.e. plantation in common land and natural regeneration.

(a) Water Harvesting Structure

A wide variety of water harvesting structures have been constructed under the projects, which reflect active participation of majority of community members. These structures were based upon indigenous knowledge as well as exogenous knowledge. From the technical viewpoint good quality of work has been done in a majority of cases. The concerned members of user groups also paid the required contribution. The decision about choice of technology, location of structure, height of structure, etc. was taken jointly by the concerned user group members and also the external resource persons. So far, these structures were in good condition, and also servicing the purpose for which they were constructed. Hence these structures appeared to have high sustainability at this stage. However the following steps need to be taken for achieving long-term sustainability namely: development of proper modality for repair and maintenance from the beginning of the programme; formal allocation of usufruct right to the users; improving the functioning of the user groups by providing capacity building, establishing norms by the user groups members etc.

By and large community oriented water harvesting structures have been functioning properly in a majority of watersheds under the project. This has happened essentially due to good quality of design and construction of structures. Other strong processes associated with WHSs are as follows.

- Adoption of participatory planning process with decision making regarding initiation of proposal; choice of technological options as well as location of structures
- Payment of genuine contribution by actual users associated with the structure
- Due emphasis on a wide range of WHSs based on indigenous as well as exogenous technical knowledge

(b) Biomass development

As indicated above, consistently sustainable results have been obtained with regard to natural regeneration of biomass. This has happened essentially due to adoption of social fencing approach by the entire community. Likewise plantation of high value horticultural crop has also shown sustainable results. This has happened essentially in high rainfall areas and also because there was an informal understanding about usufruct allocation to each member of the user group. By and large these users were informally associated with the common land in the past; hence resistance from other community members towards assumption of the above right by the user group members was not observed.

(c) Physical infrastructure

In Karnataka two major types of infrastructures were developed namely (i) training centre, (ii) composite nurseries on forest department land. The sustainability of the training centre has been high. The composite nursery has shown unsustainable results where usufruct right over the asset could not be given to the community by the forest department. With regard to nursery the same was observed in Maharashtra also.

4. Sustainable Development of Natural Resources in Private Land

Four types of interventions were made for development of private property resource namely (i) soil conservation measures, (ii) Water harvesting structures and gully control measures, (iii) horticulture plantation, (iv) forestry plantation (Aforestation). Details about status of sustainability of above interventions in two projects are given in Table-4.

Of the major interventions made regarding development of natural resource in private land, two have shown consistently sustainable results namely construction of earthen / stone bunds and Farm ponds. Two interventions have shown fluctuation in

sustainability namely (i) gully control measures and (ii) plantation of horticulture under rain fed condition in case of Karnataka. Details of sustainability of interventions are given below:

Table 4. Sustainable Development of Natural Resources in Private Land

Sl. No.	Type of intervention	Ranking of sustainability (R/Y/G)	
		Karnataka	Maharashtra
a.	Soil conservation measure		
	- Field bund with waste weir (Rmt)	G	G
	- Open drain (Rmt)	G	G
b.	Water harvesting structure and gully control measures		
	- Farm ponds	G	G
	- Nala bunds	-	G
c.	Horticulture and Forestry plantation		
	- Horticulture plantation		G
	• Block plantation	Y	-
	• Backyard plantation	Y	Y
	• Supply seedling for bund plantation	Y	
	- Forestry plantation (Aforestation)		
	• Block plantation	R	G
	• Supply of seedling for bund plantation	R	Y
	• Forestry plantation	R	Y

(a) Soil conservation measures

In both the states boundary based earthen / stone bunds were implemented not only in phase-II but even in phase-I of the project (through a special sanction by the state government out of its own funds). In the above approach, stone waste weirs were also included as a part of the bund for safe disposal of runoff.

By and large the indigenous practice of boundary based earthen / stone bund has shown high level of sustainability. There was also evidence of farmers up scaling these measures during consolidation phase in many fields at their own cost.

High sustainability of earthen bund / stone bund was essentially due to adoption of indigenous system of bunds which are located on field boundaries across the major slope. Other processes, which led to sustainability, were (I) adoption of demand-driven planning; (ii) payment of genuine contribution by actual users; (iii) flexibility in ridge to valley approach; and (iv) better quality of design and construction

(b) Water harvesting structures and Gully control measures

By and large individual oriented water harvesting structures have shown a high degree of sustainability. Low cost individual oriented water harvesting structures include Doh and farm pond, etc. They provide supplemental source of irrigation for crops as well as help in meeting other needs of the farmers, drinking water for livestock, water for spraying of pesticide, etc. The concerned families are already replicating some of them at their own cost within the project villages.

Construction of low cost water harvesting structure has also been found to be highly sustainable. Main processes, which led to sustainability were (i) due emphasis on a wide range of WHSs based upon indigenous as well as exogenous technical knowledge; (ii) timely repair and maintenance by concerned farmers; and (iii) due emphasis on meeting multiple needs of the community namely irrigation for crops, drinking water for human beings as well as for livestock, etc.

Sustainability of gully control measures in private land has been highly fluctuating These structures were constructed essentially to harvest soil and fill up gully course so that it could be used for cultivation of annual crops along with the main field. The gully control structures were essentially meant for preventing further degradation of bed erosion. Hence this type of structure provides little incentive for farmers to sustain them on a long-term basis.

(c) Horticulture and forestry plantation

Sustainability of horticulture plantation under rain fed condition was low. The forestry seeding of improved pasture and plantation in private land has however not produced sustainable results. This was primarily due to difficulty in watch and ward and long gestation period for maturity of plantation.

Under the watershed programmes, heavy emphasis is laid on both social resource development and natural resource development. However, both of these components are developed independently of one another. Towards the end of the project, they remain "stand alone" outputs without any significant bearing on each other. This is one of the reasons why sustainability of natural resource development is low in spite of adequate investment on social resource development. Integration of both these components shall lead to demand driven planning, implementation of works without contractors and genuine contribution from the community. It will also facilitate self-monitoring of the programme, which is a crucial requirement for proper empowerment of community-based organizations (CBO), finally leading to the management of farm resources through available social resource

5. Sustainable development of land based livelihoods

By and large the interventions related to organic farming, integrated pest management, micronutrient application, production and use of vermi-compost, etc. have shown high sustainability (Table-5). There was evidence of their diffusion to other farmers within the project villages during subsequent years. Likewise crop demonstrations on full package of improved technology have also shown sustainable results in agricultural crops (Bajra, Bengal gram, wheat, and Tur); Vegetable crops and also fodder crops. There was a significant level of adoption and diffusion of above technologies in the project area during subsequent years.

Table 5. Sustainable Development of Land based Livelihoods

Sl. No	Type of Livelihoods	Ranking of Sustainability (R/Y/G)	
		Karnataka	Maharashtra
a	Demonstration on full package of improved technologies		
	• Agricultural crops	G	Y
	• Vegetable crops	G	Y
	• Fodder crops	Y	G
b	Component Wise demonstrations		
	• Vermicompost at village level	Y	Y
	• IPM	Y	Y

Demonstration on full package of improved technologies in agricultural crops and vegetable crops show high sustainability in Karnataka where as they show medium level of sustainability in Maharashtra watersheds. Fodder crops have shown high sustainability in Maharashtra. There are two types of major practices demonstrated (i) production of vermi-compost at village level; and (ii) integrated pest management (IPM); have shown fluctuation in sustainability across watersheds. The rest of the interventions have shown either higher sustainability or at least tendency towards high sustainability in a consistent manner.

6. Sustainability of livestock based livelihoods

Originally livestock development programme was kept at a low key under the project, and it dealt mainly with supply of livestock to resource poor families, organization of health camps in the village, etc. However due to consistent demand by the community greater attention was paid to this component. Hence, concerted efforts were made towards genetic up gradation of breed in large ruminants as well as small ruminants; management of diseases in all types of livestock; enhancement of fodder availability in pasture land as well as cultivated land, etc.

A special effort was made towards promoting the concept of community managed breed up gradation center as well as disease management system through organization of livestock breeders association, development of para-workers (livestock) and involvement of experienced resource organizations (e.g. BAIF) for assisting the community to develop a self-reliant system.

Table 6. Sustainability of Livestock based Livelihoods

Sl. No.	Type of livelihoods / interventions	Ranking of sustainability (R/Y/G)	
		Karnataka	Maharastra
a.	Breed improvement		
	• A.I. centre for buffaloes & cows	G	G
b.	Health care		
	• Animal health camps	G	G
	• Vaccination	G	Y
c.	Nutrient management		
	• Feeds and concentrates	Y	Y
	• Fodder development	Y	G

Up gradation of livestock breed has been found to be very successful in the project area (Table-6). Community managed artificial insemination center for large ruminants (buffalo and cow) have shown high promise to become a self-reliant set-up. Choices of indigenous improved breeds for dual purpose in cows (namely Khalri and Devani) and for milk in buffalo (namely Surti and Murrah) are found to have high preference by farmers. Through this approach the programme has become successful even in areas where the milk route does not exist; likewise with community managed natural insemination unit in buffalo.

Under this component, four critical interventions were made for improving the production of livestock. Two out of the three interventions have shown high degree of sustainability namely (a) breed improvement through artificial insemination in cows and buffaloes and (b) Heath care in livestock through health camps and follow-up support by Para workers (on charge basis). (c) Nutrient management shows fluctuating results in both states.

The sustainability of healthcare has been achieved essentially by the follow-up support of Para worker (livestock) on charge basis. Other processes, which are helpful in improving sustainability in milch animals, were as follows.

- Organization of cattle breeder association (at cluster of village level) to provide institutional set-up for the above purpose. The above CBA later was refined into livestock development association. Its executive committee was also refined by having representatives from only SHGs. This CBA is further decentralized in such a way that a separate livestock development association needs to be organized in each village or a sub-committee (livestock) can be constituted as a part of the existing Village Level Federation.
- Improved financial sustainability of above CBA through enhancing the contribution by farmers on insemination per animal and also enlarging the jurisdiction to serve more number of animals per center.

7. Sustainability of non-land based livelihoods

The individual oriented enterprise through SHGs was adopted in Karnataka. The required amount of revolving fund was given to VDC as a grant; which in turn has given to SHGs as loan. After the recovery, the amount was given to other SHGs as revolving loan. This system has shown highly sustainable results. Needless to mention that the long term management of revolving fund by VDC was found to be relatively better (than giving one time revolving fund directly to SHGs, without expectation of any recovery from the groups) as it helped in sharing the funds with not only existing SHGs but also with newly emerging SHGs in the village

Table 7. Sustainability of non-land based Livelihoods

Sl. No	Type of livelihoods	Ranking of sustainability (R/Y/G)	
		Karnataka	Maharashtra
a	Community oriented enterprises through Self Help Groups like brick making unit etc.	Y	Y
b	Individual oriented enterprises through Self Help Groups		
	- Goat rearing, sheep rearing,	G	G
	- Supply buffaloes,	Y	-
	- Skill based enterprises etc,	Y	-
c	Individual oriented enterprises		
	- Goat rearing, sheep rearing,	G	G
	- Vermi compost etc.	Y	Y

Three types of interventions have been made under this component namely (a) community oriented livelihoods (b) individual oriented livelihoods. Individual oriented

livelihoods have been implemented in two different ways: (i) providing project fund to those individuals who were organized in SHGs and (ii) providing project fund to those individuals who were not yet organized in the SHGs. Individual oriented enterprises through SHGs like goat rearing and sheep rearing have shown highly sustainable results. Similarly, individual oriented enterprises on individual basis have also been found to be very successful. The systems of providing revolving fund to SHGs as loan through VDCs on rotation basis have also shown highly sustainable results.

Conclusions and Implications

The above analysis clearly shows that while the programme guidelines make provision for withdrawal strategies for sustainability of watersheds, there are some critical deficiencies in both conceptual and operational aspects. This invariably results in less than satisfactory sustainability processes of the PIAs and the taking over by the community at the end of the projects. Project sustainability cannot be ensured by maintaining created assets alone . It also requires the envisioning of the community and the various village level institutions formed in their specific areas of present and potential functions to be able to address new and emerging concerns of development in the post project scenario. New roles need to be accepted, new capacities developed for planning, implementation and monitoring. What is critically important is that the VLIs and the community additionally accept not only the role of project managers but also resource mobilizers and roles that they have to perform during the post- project period.

It is, suggested that the following activities may be specially built into the programme design during which the concerns and issues would be addressed for sustainability of watersheds:

i) Facilitate envisioning of the community and the village level institutions to prepare them for their new role in planning, mobilizing resources and managing projects/ interventions that would address the new and emerging concerns of development in the villages in the post project scenario.

ii) Institutional strengthening and capacity building of the various village level institutions and the development of a Community Based Management System

(iii) Facilitate the transfer of assets and entitlement rights to beneficiary groups over project assets established on common lands and of community assets established on private lands

(iv) Linkages with credit institutions

(v) Capacity building of different stakeholders: Considerable focus needs to be given on building the capacity of village level institutions particularly SHGs, UGs,

watershed committee, etc., on group development, management process, watershed planning, implementation, conflict resolution, monitoring, evaluation, post-project sustainability, withdrawal strategy etc.

(vi) Convergence of Activities of Different Departments / Agencies: Field experience has shown that convergence of activities and different departments can be achieved effectively if there were mature SHG, UG and there was a management body of these groups (WA) to provide a platform for convergence.

(vii) Develop an exit strategy from the beginning of the project. The Exit strategy shall specify a mechanism for maintenance of assets created, augmentation including levy and collection of user charges, utilization of the Watershed Development Fund, mechanism for equitable distribution and sustainability of benefits etc. The detailed mechanism for such Exit strategy should form part of the Action Plan/ Treatment Plan for approval.

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