

## **An Evaluative Study of the Food Security among BPL Households and Agriculture in the Hill Rural Areas: A Study of Pauri District of Uttarakhand**

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**ABSTRACT :** *The poorest of the poor section of the community which has been marginalized on the basis of the level of poverty i.e BPL household members, are in the worse state and represents the last persons in terms of deficiency of even the lowest minimum level of living required for mere existence. This problem of the BPL households is so grave that they are not only far away from meeting their minimum economic needs and requirements but also faces the crisis of food security. Food availability is a necessary condition for food security. India is more or less self sufficient in cereals but deficit in pulses and oilseeds which is indicated in the food basket provided through PDS under the food security policy in the country. This creates a challenge for the delivery of minimum nutritious diet to the economically deprived sections of the society. The concerning aspect in this picture is not only that in our country we have failed to delivery minimum nutritious diet but we are still short of providing minimum quantity of diet and to all of the economically deprived sections of the society in time. The lack of growth in the employment generation and falling agriculture share has enhanced the problems of food security. The situation is much worse in the case of the rural areas of the country where there are poor opportunities for generating employment. The paper focuses on the gravity of the problem and presents a policy framework for achieving food security for the backward regions of the state.*

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### **I. INTRODUCTION**

The Hill areas of Uttarakhand are renowned for its natural setting and religious endowments worldwide reflecting the potential and wealth of the state, but on the contrary these regions present tough living and working condition for those residing in these hilly areas. The natural and geographical settings of these regions have indirectly enacted in way of the growth of employment opportunities in these regions as they are not conducive for industrial development. This has always led to the problem of lack of Employment opportunities in these regions which is further been accentuated by the poor infrastructural development of these regions. Agriculture and the allied activities are the only source of living to small extent and a source of subsistence to a large extent of the residents of these backward areas. The poor development of agriculture categorised by small land holdings, poor irrigation facilities, terraced type farming pattern and many other problems have pushed back agriculture to act as meagre income generator for the residents of these areas. The geographical settings of the rural hill regions of the state does not provide the suitable environment for industrial development which has resulted in lack of job opportunities mainly in the secondary sector in these regions. The severe negligence of the small scale and cottage industries in these regions has further accentuated the problem of unemployment. Among these problems and further due to poor income and employment opportunities in other sectors in these regions has led to the huge migration of the youths from these regions. The migration has been so largely associated with these regions that the economy in these regions has been as 'Money order Economy'. Among these adversities and the backwardness, the section of the community which has been marginalized on the basis of the level of poverty i.e BPL household members, are in the worse state and represents the last persons in terms of deficiency of even the lowest minimum level of living required for mere existence. The continued process of migration and increasing difference between the hill rural regions and urban areas has continuously enhanced the level and magnitude of deprivation of the inhabitants of these already deprived regions. This problem of the BPL households is so grave that they are not only far away from meeting their minimum economic needs and requirements but also faces the crisis of food security. Although PDS has supported these economically deprived households but it has failed to meet the food security criteria for minimum level of living.

**Food Security :** The World Food Summit of 1996 defined food security as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences. In many countries, health problems related to dietary excess are an ever increasing threat, In fact, malnutrition and food borne diarrhea are become double burden.

Food security is built on three pillars:

- Food availability: sufficient quantities of food available on a consistent basis.
- Food access: having sufficient resources to obtain appropriate foods for a nutritious diet.
- Food use: appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation. (WHO, <http://www.who.int/trade/glossary/story028/en/>)

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**Study Area and Research methodology:** According to the 2011 census provisional data 83.59 percent of the total population of the Pauri district resides in rural areas. Census of 2011 further shows that majority of population residing in rural areas of the district is of females, while males constitutes 46.6 percent of the total rural population the female comprises of 53.4 percent. The inhabitants of the district are largely engaged in agricultural activities. However, the land under agriculture is decreasing and there is an increase in migration to the cities for other livelihoods. Except for Kotdwar and Srinagar, which have a few production units and cottage industries there is no production unit anywhere else in the district. Some large and small industrial units have been established around Kotdwara e.g. SIDCUL. Besides, army / para-military forces and teaching are a major source of employment for young people.

The population for the study comprises of the officially declared the total number of BPL households in all the fifteen development blocks of Pauri Garhwal district of Uttarakhand state. As per the government records the total population of BPL households in the district as per 2011 records is 60909. Out of the total 60909 households 14357 belongs to Scheduled caste category, 570 belong to Scheduled Tribe Category, 438 households are Minorities while 44993 households belongs to General Category. For the study a total sample of 600 BPL households was randomly selected from all the fifteen development blocks of Pauri Garhwal district of Uttarakhand state. From each development block four villages were selected for the study. From each village a total of 10 villages were selected for the study. Hence a total of 40 households from each development block were selected for the present study. From a total of 15 development blocks total 60 villages were studied from which a total of 600 BPL households were selected for the study. Further for making the study more representative households were taken from are all the caste category and religion.

**Research Findings:** The main problem faced by the BPL households of these hill rural regions is the huge deficit in meeting the minimum dietary requirements for their members. The problem is not only to an extent that the these households are short of the nutritious diet but even so prominent that reflects on the fact that these households even fails to consume the minimum quantity of food needed for their family members. The failure of Public distribution system, under developed agriculture, lack of employment opportunities and poor implementation of government programs are some of the major factors which results in sustaining this basic problem.

**Failure of Public Distribution System:** Public distribution system in these regions has not helped in meeting the minimum dietary requirements of these households and thus has not helped in attaining food security for this section of community which is economically deprived. The major problems associated with the public distribution system in these regions are as follows:

- Less number of items provided under PDS

Following are the food and non-food items provided under the PDS in these regions:

Wheat, Rice, Sugar, kerosene

The analysis of the items required for attaining minimum nutritious diet like pulses are missing in this system which reflects in its deficiency in providing adequate food security to the members of the BPL households in these regions. Apart from failing in fulfilling the minimum nutritious dietary requirements of BPL households the PDS system has even failed to meet the minimum quantity of allotted items requirements to the BPL households of these regions. Many problems results in the failure of PDS in delivering the minimum prescribed quantity of items, some of which are revealed in the table provided below:

Table No: 1 Problems faced in TPDS by the BPL households

S.No	Problems in Food availability through TPDS	Frequency of the problem (No. of Households)			
		Always (a)	Sometimes (b)	Very less times (c)	Never (d)
1	Untimely delivery	147 (24.5%)	239 (39.8%)	153 (25.5%)	61 (10.2%)
2	Less than entitled quota	312 (52%)	129 (21.5%)	112 (18.7%)	47 (7.8%)
3	Excessive prices	-	-	27 (4.5%)	573 (95.5%)
4	False beneficiaries	476 (79.3%)	82 (13.7%)	31 (5.2%)	11 (1.8%)
5	Other Corruption	382 (63.7%)	117 (19.5%)	61 (10.2%)	40 (6.6%)
Total					

Source: Field Survey, ICSSR, R.P- Nov 2013 to Sept, 2014

1. Untimely delivery:

Untimely delivery of the food items is the major problem accepted by the BPL households of these regions. The study identified that many times the food item delivery through PDS is made after a period of one or two month gap. The other concerning aspect is that the undistributed quota of those gap months is not provided to these households in future. This means that in such cases the item delivery through PDS is not for entire twelve months. The problem of untimely delivery is poor in case of all items but it is severe in case of Rice and Kerosene. The households have accepted that sometimes it takes a gap of 6 months for receiving Kerosene through PDS.

2. Less than entitled quota:

The other major problem revealed in the study is the delivery of less than entitled quota of food and non-food item through PDS. This problem is graver in case of Rice and Kerosene.

3. Existence of false beneficiaries:

Majority of BPL households have accepted that PDS in these regions have failed due to existence of false beneficiaries. Majority of the BPL cards have been prepared through malpractices which reduces the availability of ration for the actual beneficiaries.

4. Other corruption:

The availability of other corruption like black marketing of PDS items in open market by the fair price shop owners decreases the capacity of PDS to fulfill the actual demand of the real beneficiaries. Many BPL household members have revealed that households which have strong relations with the fair price shop owners tend to drive larger quantity than their allotted quota. Some households have revealed during study that the fair price shop owners always conveys to them about the less availability of food and non-food items with them but on the same time they deliver large amount of such items to the members for conducting their social and religious family ceremonies.

5. Complete failure in case of kerosene delivery:

The BPL households have revealed the common problem of complete unavailability of kerosene for them through PDS.

**Perspective of Fair price shop owners:** During the study these problems associated with the PDS revealed by the BPL households were discussed with the fair price shop owners. In the discussion they accepted the delivery of less than prescribed quota of ration to the households and also the problem of untimely delivery. But they shifted the entire issue over the shoulders of state government which provide them less quantity of items and also deliver them in untimely manner. Hence to meet out the requirements of all the households they are forced to provide less than the prescribed quota to these households.

**Agriculture related Problems and Food security:** Agriculture is not a profitable means of employment in this hilly district due to its uneven geographical conditions, small terraced fields and non-availability of proper irrigation facilities. This sector although is a major source of employment due to dearth of other employment opportunities in these regions, but even then it has failed to support the economically deprived sections of these

regions which are largely depended on it. The tough geographical conditions along with ever increasing problems in this sector have marginalized this area of income generation thus enhancing the problems of the inhabitants of these regions. In the district, the agricultural land is in the form of narrow terraces and scattered holdings except in the case of river valleys and in most cases uneconomical for cultivation. The cultivated land is mostly non-irrigated, terraced field with undulating slopes, with extreme climatic variations and abrupt changes in altitudes are the prominent problems associated with agriculture. Due to these variations the cropping pattern changes with the altitude and the climatic conditions. Wheat and Barley are the main 'Rabi' crops while Rice, Kodo, Sanva are main 'Kharif' crops of the district. Urad, Arhar are the main pulses grown in the district while Mustard and Soybean dominate in oil seeds. Although, agro-ecological condition favours diversification of crops and agro-biodiversity is very high in the Garhwal region, the pace of diversifying cash crops for commercialization is tremendously low. Diversity in crops varies spatially - horizontal and vertical and temporally - Rabi and kharif seasons. The highlands characterize high agro-biodiversity in comparison to the mid-slopes and the valley regions. Among this background of agriculture status in these areas the study highlights the other major problems which could be treated with the help of proper policy framework:

**1. Wild Animal Encroachments in agriculture fields**

The major problem which has been revealed in the study by the farmers belonging to the BPL households is the problem of wild animals which very frequently destroy their agriculture produce in large quantities. This problem has become so prominent in these regions that many households have refrained themselves from engaging in agriculture activities due to fear of these wild animals. Further these families are not financial equipped to build fences or boundaries for protecting their agriculture farm and yields from these wild animals. Such prominent is the fear of wild pigs and monkeys among the farmers of these regions that they have been forced to shift towards other forms of employment and income generation. This has resulted in increasing the land barrenness among these regions and further increasing the problems of the economically deprived inhabitants of these regions.

**2. Low usage of hybrid, modified and good quality of seeds**

The farmers due to many issues are not using the good variety and quality of seeds which is not only resulting in low agriculture production but also rapidly decreasing their agriculture productivity. There are many reasons for this, prominent among it is the high price of the hybrid seeds (Rs.14 to Rs.16 per kg) and secondly due to poor status of agriculture these farmers do not keep previous season seeds which forces them to either purchase new seed or to use BPL card allocated seeds. Due to the high price of these seeds the majority of the BPL families use food grains obtained from BPL card as seed for agriculture production, which is poor in quality. This leads to poor agriculture production and poor status of agriculture in these areas. This not only reduces the food for consumption for their families but also leads to poor agriculture production and productivity. The other reason for not using these good quality seeds is the lack of awareness about these seeds among the BPL families engaged in agriculture activities. These BPL households are not only unaware of these seeds but also lack the basic knowledge about the modern agriculture methods and techniques to improve the agriculture productivity. The other factor responsible for the lack of usage of the high quality seeds by the BPL households is the poor accessibility of these seeds for them.

**3. Poor Irrigation facilities**

Along with the problems which are experienced in the terraced type of farms the other major problem is of poor irrigation facilities. This problem is so prominent that majority of agriculture land has turned barren and infertile due to lack of adequate water supply. Many of water supply modes like water pumps are not in the financial reach of these poor households which pushes these households to lease their land at cheap prices to immigrant from other regions. The leasing of land to these immigrants has also led to barrenness of their agriculture farms due to the over exploitation and poor farm practices followed by these immigrants.

**4. Shift from organic farming methods to conventional farming methods**

Due to poor agriculture productivity and many other problems the BPL households have started to lease out their land to immigrants. Hired agricultural workers or the workers working on the leased land are more inclined towards the conventional farming methods relatively to organic/traditional farming methods. This inclination of the immigrants towards conventional farming methods is very higher in comparison to the local agricultural households of these regions. As these immigrants to these areas, are fully unaware of the traditional knowledge of agricultural practices and are more inclined towards income generation activities even on the cost of agricultural sustainability they easily opt for the conventional form of farming

in these areas. These immigrants are more dependent towards agriculture for survival than the local households in the district. This dependence has negatively affected their participation in the agricultural activities in terms of commercialization of the agriculture. They have always treated agriculture as a mere form of minimum subsistence. But the growing tendency towards conventional farming due to greater involvement of these immigrants and its follow up by the local inhabitants endangers the subsistence nature of the agriculture. The immigrants who are not permanent dwellers of these regions keep on shifting their living and earning areas as per their interest, which is mainly of quick income generation, largely damaging the bio-diversity and agricultural sustainability of the region.

The study highlights the three major issues which are decreasing the sustainability of agriculture in these regions.

1. Loss of crop diversity- mainly due to unscientific usage by immigrants
2. Increasing trend of shift from organic to conventional farming
- The higher use of agrochemicals contributed in the reduction of natural fertility of the soil, destruction of soil structure, aeration and water holding capacity, indiscriminate killing of useful insects, microorganisms and predators that naturally check excess crop damage by insects and pests, poisoning the food with high toxic pesticides residues

The shift towards the conventional farming pattern from the traditional farming is increasing to such an extent that the traditional knowledge which possess the highly sustainable techniques for agriculture are getting extinct. The locals in these regions are barring themselves from using such traditional methods and hence such traditional practices know-how is in danger of getting extinct. The increasing dependence on the conventional techniques and extensive farming has led to enhance the dependency on the irrigation facilities which is a major concern in the wake of rapid climatic changes. Further the usage of the extensive agriculture techniques has led to the enhancement of the problems like decrease in water retention, fall in soil fertility, and increase in soil erosion which has resulted in the lessening of the fertile agricultural land in these areas. The shift to conventional farming techniques has increased the dependency on the market for the agriculture supplements and has also enhanced the agriculture cost. This dependency has led to the problem of financial investment among the local. In some cases the locals has taken the help of money lenders or the immigrants for meeting up the financial constraints which is the initiation of the undue exploitation. The returns from the conventional agricultural could be reaped in the short period but in the long period the agriculture productivity is due to become stagnant and even resulting in its fall, which further reduces the fall in agriculture income.

### **Shifting of BPL families from agriculture towards other income generating activities**

This shift of the poor farmers from agriculture to other activities and poor productivity of agriculture has resulted in:-

- [1]. Increasing bareness of agriculture land
- [2]. Decrease in size of operational land holdings
- [3]. Leasing of land to immigrants
- [4]. Shift from organic farming to conventional farming methods for increasing production

All these after effects generated due to shift of local farmers from agriculture to other sources of income and employment generation are not only decreasing the status of agriculture but also drastically reducing the agriculture sustainability in these areas. Decrease in size of operational land holdings and increasing percentage of barren land has resulted in failure of agriculture to sustain the livelihood of the residents of these areas. The other aspect, that is, the increase in leasing of agriculture land to immigrants from other states and country like Nepal has rapidly decreased the sustainability of agriculture land in these areas as the agriculture practices adopted by these immigrants is unsustainable and in long term will not only decrease the fertility of these lands but will also enhance the danger of increasing land barrenness. Amidst all these problems the poor production and productivity of agriculture has forced the inhabitants of these regions to shift towards conventional farming methods from organic farming methods which has resulted in poor sustainability of agriculture in these regions.

## **II. POOR GOVERNMENT SUPPORT FOR AGRICULTURE DEVELOPMENT**

All these agricultural problems faced by the BPL households are aggravated due to the lack of government support. The study revealed that government has failed to provide direct or indirect support to the BPL families for increasing their participation in agriculture. Further the other public work programs like MNREGA has also not assisted in developing agriculture in these regions.

### Associative analysis of Environment, poverty and Agriculture

All the agriculture problems do not have their all together origin in issues of poverty but the rapid changes in the environment and the problems created by environmental conditions mainly in these areas with harsh geographical regions have their equal contribution. These regions are more susceptible to climate change due to the following reasons:

- Reductions in agriculture production as a result of climate change is expected to be more prominent for rain fed crops (as opposed to irrigated crops) and under limited water supply situations because there are no coping mechanisms for rainfall variability. Further the agriculture in these regions is largely depended on the rainfall as the irrigation facilities are almost absent or very poorly developed. This increases their vulnerability to the climate change.
- Small holdings, poor coping mechanisms and low penetration of mechanisms and low penetration of risk management products are the other factors which increases the vulnerability of the agriculture towards climate changes in these hill rural regions
- Poor geographical settings of the agricultural lands in these areas; majority of the farming in these region are carried out in terraced farms which are highly prone to the disastrous effects of heavy rain spells which not only destroys the yields but also erodes away the top fertile soil from these agricultural lands.
- The increasing pattern of unsustainable farming methods due to poor awareness about agriculture production methods and increasing participation of immigrants in the agriculture activities which follows the highly exploitive methods of farming with increased use of unsustainable farming methods has resulted in increasing the vulnerability of agriculture land and production to climate change.

The impact of climate change has been prominent on the agriculture production and productivity and hence forced the farmers to move to reduce the level of agriculture production which is noticed in the decrease in the operational land holdings and in increasing land barrenness in these areas. This has degraded the agriculture status and further has enhanced the vulnerability of agriculture land and its productivity to the climate change in these areas. The failure of agriculture in these areas due to increasing poverty and climate change has simultaneously worked on each other as a result the gravity of impact of each factor has become more and more prominent thus making the life of the residents of these areas more vulnerable.

### III. POLICY PRESCRIPTIONS

To build the policy framework for attaining food security through development of local agriculture system it is important to initially analyze the potential beneficiaries and target areas for developing agriculture in these backward regions.

Table No: 2 Potential Beneficiary effects through development of Agriculture

S.No	Potential Beneficiary effects through development of Agriculture
1	Attainment of Food security
2	Becoming a major source of income generation for BPL households
3	Women Economic and Social empowerment
4	Decrease in migration from these regions
4	Environmental Benefits

The study leads us to conclude that development of agriculture will not only help in attaining food security and income to the economically deprived households of these regions but will also help in empowering the socially deprived sections of these regions which are females of these regions. The development of agriculture could also result in reversing the process of migration of youths from these regions. The agriculture development will also help in preserving environment as its development will decrease the activity of felling of trees for creation of more agriculture land.

Table No: 3 Target areas for development of agriculture

S.No	Areas in agriculture which should be targeted for its development
1	Development of Irrigation facilities
2	Relief from wild animals
3	Facilitation of hybrid seeds through PDS
4	Promotion of Organic Farming methods

**To target the above aspects for development of agriculture following steps could be implemented:**

**1. For development of irrigation facilities for agriculture:**

The study has shown that irrigation facilities are poorly developed in these regions which are mainly due to the geographical settings of the region and lack luster approach of government. To develop the agriculture through developing irrigation facilities in these regions following policy actions are essentially required:

- a. Soil and Water conservation – For water conservation watershed approach should be intensively adopted and promoted in these areas, which should be assisted with construction of water harvesting structures. Further for soil conservation activities like for prevention of soil erosion, forestation and terracing should be promoted in these rains fed areas.
  - b. Adequate utilization of Natural Stream- Majority of the water sources in these areas are the natural streams, water from these streams get wasted, to make its adequate use its conservation should be done scientifically for utilizing it for irrigation.
  - c. Minor irrigation projects based on tanks and reservoirs – Due to little scope of other sources minor irrigation projects based on tanks and reservoirs should be developed in these regions
  - d. Sprinklers and drip irrigation systems- These systems are extremely useful for these rain fed areas
  - e. Restoration of defunct canals- A huge amount of canals in these areas has gone dry or dysfunctional due to poor maintenance and other reasons. Government should identify such canals and work on their restoration. MNREGA activities should be targeted towards restoration of such canals.
  - f. Development of Horticulture - the agricultural land of the district is much suitable for fruit and vegetable production in comparison of agricultural production. Further as the production of fruits like apples requires less moisture than vegetables, horticulture activities should be promoted in these regions. Further for such promotion agro processing units and agro industries should be established nearby these areas.
  - g. Promotion of Organic Farming methods – Since organically grown crop are more drought resistant, promotion of organic farming should be executed in these areas.
2. Relief from wild animals- The increasing number of wild animals' mainly wild pigs and monkeys is a growing problem for the farmers of these regions. The study shows that these wild animals cause huge destructions of crops and there is no remedy from this problem. The problem has become so prominent that farmers have refrain themselves from agriculture activities. Keeping the problems of farmers' government should take appropriate actions for dealing with this problem with priority. Adequate support for construction of fencing and other solution related to reduce the growing population of such animals are immediately required in these areas.
3. Hybrid seeds availability- The farmers mainly from the BPL families should be regularly provided Hybrid seeds. PDS shops should be used by the government to facilitate the demand of such seeds for the farmers. Further these seeds should be provided at affordable prices to these farmers.
4. Promotion of Organic farming methods- organic farming methods should be promoted in these regions due to their benefits for such areas. In the district, the agricultural land is in the form of narrow terraces and scattered holdings except in the case of river valleys and in most cases uneconomical for cultivation. The cultivated land is a mostly non-irrigated, terraced field with undulating slopes, with extreme climatic variations and abrupt changes in altitudes. Due to these variations the cropping pattern changes with the altitude and the climatic conditions. Over the decades, Sustainable farming methods are known to be utilized by the hill rural communities which suits the requirements and constrains faced by agriculture in these areas. Hill rural areas of the state are poorly developed in terms of irrigation facilities further during the rainy season soil erosion negatively affects the soil fertility. But the existence of sustainable farming method helps in dealing with these problems. Sustainable agriculture/farming methods supports the establishment of agro-eco-system and leads to sustained crop yields on long term basis. Sustainable agriculture refers to farming pattern where the agro-eco-systems function on self sustaining basis of nutrient supply and crop protection in order to stabilize the crop yields. Sustainable agriculture involves practices such as organic farming, biological and natural control of pests, and emphasis of watershed approach to conserve the soil and water, buildup of micro-flora in close harmony with beneficial soil inhabitants and complete resisting the use of chemicals. Keeping harmful contaminants such as pesticides and nitrates out of the water table helps crop growth and ensures the continued arability of the land. Organic farming is far better than conventional systems when it comes to building, maintaining and replenishing the health of the soil. For soil health alone, organic agriculture is more sustainable than conventional. When one also considers yields, economic viability, energy usage, and human health, it's clear that organic farming is sustainable, while current conventional practices are not. Organic agriculture seeks to augment ecological

processes that foster plant nutrition while conserving soil and water resources. Organic systems eliminate agrichemicals and reduce other external inputs to improve the environment as well as farm economics.

#### **5. Other policy aspects:**

- a. Warehouses and cold storages for the preservation of the fruits and vegetables- The other major obstacle in the development of agriculture in these areas is the lack of warehouses and cold storages. Even if they are present in marginal numbers they do not have accessibility to large number of small and marginal farmers of these areas.
- b. Cooperative farming- Cooperative farming should be implemented in these areas through proper government assistance which should be financial and also through training programs for the farmers of these areas. Cooperative farming is also essential for dealing with the main problems of marginal holdings in these areas largely among the economically deprived households of these backward regions.

**Support for horticulture and vegetable production:** The study identified that there is large scope for development of horticulture and vegetable production in these areas. The development of these areas could assist in development of income earning opportunities among the economically deprived households of these regions. Government support is needed for development of these areas as presently they are surrounded by many problems of which prominent are the lack of credit, marketing and storage facility.

The study concludes that development of agriculture through income and employment generation will not only help in reversing the process of migration from these areas but will also help the economically deprived households to attain food security without totally depending on the government support system.

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