

Analysis of capital assets of Natural Resources Management System in the Agricultural Production Cooperatives (APCs) in Fars Province, Iran

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Abstract: The purpose of this article is to Analysis the Natural Resources Management's Systems in the Agricultural Production Cooperatives (APCs). A theoretical framework "Natural Resource Management" was used to analyze the system in 5 capital assets; Human, Social, Natural, Physical and Financial. A survey method was used to collect data from Fars province in Iran. Data were collected from 132 member farmers in 9 APCs using a stratified random sampling method. It is concluded that the Social capital throughout the nine sites obtained more score (64.6) than the rest of the other capitals. Also, the asset status framework was applied to provide a mean of measuring access to, utilization status of the 5 capitals of the NRM system for APCs.

Key words: Agricultural Production Cooperative (APC), Natural Resource Management (NRM), capital assets, Fars Province, Iran.

INTRODUCTION

Growing population and compulsions of poverty have exerted increasing pressure on Natural resources leading to their gradual degradation. This has led to a renewed interest in alternative resource management's system as a viable option to the current pattern of natural resource's utilization. Alternative systems which may be a mix of traditional and modern approaches can help to manage the natural resources on a sustainable basis. This has led to a search for feasible and sustainable alternatives to meet the pressing needs of regenerating agriculture (Reddy 2002): Agricultural Production Cooperatives (APCs) was a best option for achieve to this objective. Theoretically, agricultural cooperatives are considered the backbone of agricultural development in many countries. By pooling individual holdings, cooperatives should logically yield a surplus far in excess of what an individual holder is able to produce in a tiny plot. From an economic point of view, cooperative farming is expected to increase production, increase the profitability of farming, and satisfy the needs of its members and society at large. From a social point of view, production cooperatives are expected to raise the professional and cultural qualifications of their members. However, it remains controversial whether the cooperatives have achieved these development objectives in reality (Karami & Rezaei- moghaddam, 2005).

Agricultural Production Cooperatives were established in Iran in early 1970s in order to increase the production of the large number of small and fragmented production units that were the consequence of the 1962 land reform. The number of agricultural producers had increased from 1.8 million in pre-land reform phase in 1960 to 2.6 million in 1991. This is in contradiction with the experience of other countries, where development resulted in a decline in the number of agricultural producers and a rise in the size of production units (Abdollahi, 1998). After the Islamic Revolution of 1978, some rural production cooperatives were dissolved. However, after 1996 the establishment of APCs became a major strategy of the Ministry of Agriculture in its efforts to achieve agricultural development and increase production. Therefore, in terms of sheer numbers APCs grew rapidly.

According to the laws and regulations governing APCs, they are established with the aims of consolidating the land of voluntary farmers who become members, increasing the productivity of soil and water resources by providing modern irrigation infrastructure, leveling of agricultural land, familiarizing farmers with modern methods of production and harvesting, efficient use of agricultural machinery, facilitating establishment of

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agricultural industry, and finally improving the income and living conditions of rural households (Karami & Rezaei-moghaddam, 2005).

Recent studies on the impacts of APCs in Iran show that APCs were unsuccessful in achieving land consolidation and group work, which were the main reasons for their establishment (Masoomi, 1988, Anoshervani, 1994, Rouhani, 1997, Darvishinia, 2000 in Karami & Rezaei-moghaddam, 2005).

Natural resource management systems as core of sustainable development, characterized by a high level of complexity, and shaped by unpredictable external and internal changes. These management systems aim to address sustainability conflicts, which we face from global to local scales. These conflicts reflect the urgent need to change our current modes of production, consumption patterns and technological choices to balance human well being with ecological and social resilience. Overexploitation of natural resources, devastation of environmental services and an increasing number of social conflicts following the unsustainable use of natural resources demonstrate the wide gap between the objectives of sustainability and current resource management practices (Carpenter *et al.*, 2002, Rammel *et al.*, 2007). Therefore, the purpose of present study is to analysis of the natural resources management's system in agricultural production cooperatives in the financial, physical, natural, human and social view points.

Theoretical Framework:

Awareness of the need to improve natural resources' management has been growing around the world, based on this general agreement in development studies that sustainable development in rural areas requires a rethinking of how actor groups—including scientists— negotiate and organize natural resource utilization (Long and Villareal, 1994; Strigl, 2003, Rist., *et al.*, 2007). On the other hand, recently researches revealed that Some 1.2 billion people worldwide have an income less than a dollar-a-day; In deed they are in dollar poverty. Forty-four per cent are in South Asia; about 24% are in sub-Saharan Africa and East Asia, and 6.5% in Latin America and the Caribbean. Seventy-five per cent of the dollar poor individual work and live in rural areas; projections suggest that over 60% will continue to do so till 2025 (IFAD, 2001).

Resource Sustainable management must be an integrated and interdisciplinary process aiming at the interdependencies between institutions, environmental dynamics, economic processes, applied technologies and dominant cultures in managing and administrating natural resources. Also, there is growing interest in the NRM and how to achieve to the proposed models is one of the most important parts of basic study. In scientific references a number of environmental, economical, social benefits have been attributed to sustainable agriculture (Rahman and Yamao, 2007). Overcoming some of mentioned issues requires a good understanding of each resources and users and ways to manage resources more successful from society's point of view.

The Sustainable Livelihood Approach (SLA) developed by DFID is a way of thinking about the objectives, scope and priorities for development, in order to address poverty (Ashley and Carney, 1999). It operates on an understanding that people operate within systems: household systems, community systems, social systems and, in particular, livelihood systems. Starting with people and the way they lead their lives, SLA seeks to find practical ways to investigate individual and collective social and economic advancement, to organize information relevant to that advancement and to genuinely engage the 'poor' themselves in the entire process of creating wealth.

SLA submits that fostering sustainable livelihoods is the key for poverty alleviation, wealth creation and sustainable development. Livelihoods comprise people and their capabilities, material assets (including food and income), social assets and activities required for a means of living (Ashley and Carney, 1999; Chambers and Conway, 1992).. Chambers and Conway (1992) noted that a livelihood is sustainable when it can 'cope and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.

Analyzing assets is a key practice in SLAs. Assets are anything, for example, skills, capacities, and/or social arrangements that a person may have or have to access. Typically, assets are divided into five categories: human, social, financial, physical and natural (Carney, 1998; De Gruchy, 2004; Nicol, 2000). Our framework is neither a model that aims to incorporate all the key elements of people's livelihoods, nor a universal solution. Rather, it is a means of stimulating thought and analysis natural resource management system (NRMS) in APCs based on five capitals in SLA. In this research NRMS analysis assumed similar to assessment of five capitals of SLA. Therefore, our theoretical framework about "*Natural Resource Management system in Agricultural Production Cooperatives (APCs)*" that is illustrated in Fig. 1 was developed. Based on research framework Natural Resource Management System in APCs is considered to be stocks of different types of 'capital' that can be used directly or indirectly to generate livelihoods. They can give rise to a flow of output, possibly becoming depleted as a consequence, or may be accumulated as a surplus to be invested in future productive activities.

Natural Capital Consists of land, water, and biological resources such as trees, pasture, and wildlife. The productivity of these resources may be degraded or improved by human management.

Physical capital is that created by economic production. It includes infrastructure, such as roads, Irrigation works, electricity supply, and reticulated water, and also producer goods such as machinery.

Human capital is constituted by the quantity and quality of Labour available. At household level, therefore it is determined by household size, but also by the education, skills, and health of household members.

Financial capital consists of stocks of money or other savings in liquid form. In this sense it not only includes financial assets such as pension rights, but should also include easily-disposed assets such as livestock, which in other senses may be considered as natural capital.

Social capital includes any assets such as rights or claims which are derived from membership of a group. This includes the ability to call on friends or kin for help in times of need, support from trade or professional associations (e.g. farmers' associations), and political claims on chiefs or politicians to provide assistance. These latter are sometimes discriminated as 'vertical' claims on structures of authority, contrasted with 'horizontal' claims among group members of similar status. The ability to make such claims may be considered as a mark of social inclusion or exclusion of particular individuals or groups.

MATERIALS AND METHODS

The study used a survey design for data collection. The study area consisted of Fars province, one of the southern provinces of Iran where a leading province in agricultural production in Iran is. Stratified random sampling was used to select APCs. The three parts based on weather situation (North, Center and South) were used as strata. A simple random sample of APCs was selected from each stratum (9 APCs). In each APC, interviews were conducted randomly selected farmers. Data were collected from 132 member farmers in 9 APCs. Structured questionnaires were used for field interviews. The definition of the indicators used in the model is presented in Table 1.

RESULTS AND DISCUSSION

Two parts illustrate findings: Analysis of the 5 capital assets among APCs and Designing of asset status framework for the APCs.

Analysis of the 5 capital assets among APCs:

We designed a framework for APCs rapid appraisal through a combination of 5 capitals assesses which represents their situation in each APC. The score from indicators is assigned for each capital depending upon where the 5 capitals in APC fall – the worst having the lowest Situation, and the best having the highest. The scores for each capital depicted on "APC cobweb" for a more rapid visual appreciation (Figur 2).

As we shown in Figure 2.1, Social capital throughout the nine sites obtained more score (64.6) than the other capitals. Considering the research results, score of other Capitals were 48.9, 48.4, 43.3, and 33.4 for human, natural, financial and physical capital, respectively. Situation details of 5 capitals in each APC have been distinguished in Figures 2.2 to 2.10.

The Asset Status Framework for the Fars Province APCs:

The purpose of the asset status framework was to provide a means of measuring access to, utilization and/or endowment status of the 5 capitals of the NRM model for APCs. As mentioned in paper, NRM framework identifies five basic types of capital that comprise the assets of farmers: natural, physical, financial human and social. Chambers and Conway 1992; Carney 1998; Scoones 1998; Bebbington 1999, argue that successful Natural Resource Management depends on a systemic approach that view holistic of (capital assets) that stakeholders live within and manage.

For APCs, an asset status framework was developed with the intention of defining the 'highest' and the 'lowest' asset status for each of the five different capitals. This was to characterize the range of the 5 capitals in Fars province APCs. For elaborate understanding of the results, the each of capital were classified into four categories based on mean and SD (Standard Deviation). Four categories identified with score 13, score 38, score 63 and score 88. Then we give percentage for each of the categories. This was to give a simple picture of the composition of farmers in each APC according to the developed asset status framework. According to the developed asset status framework in this way, it was possible to derive a picture of not only the range of capital endowments but also an approximation of the distribution for the APCs (Figure 1).

Table 1: Fars Province APCs Indicator set organized under the 5 capital of the NRM approach

| Capital | Indicators |
|-----------|---|
| Social | Satisfying farmers needs by APCs, Membership record, status& prestige in society (land ownership) |
| Human | Age, educational level, knowledge of agriculture, skills, Extension advice |
| Natural | Access to land, water, productivity (per unit of land, per unit of inputs), soil quality, land consolidation, cropping pattern (biodiversity) |
| Physical | Access to water canals, , markets, ownership/ access to productive equipment (tractor, irrigation equipment), infrastructure facilities, transport equipment, improved seeds, packaging equipment |
| Financial | Loan, Government aid, Income level, financial savings, access to credit and agricultural insurance, waste production, price of farm products |

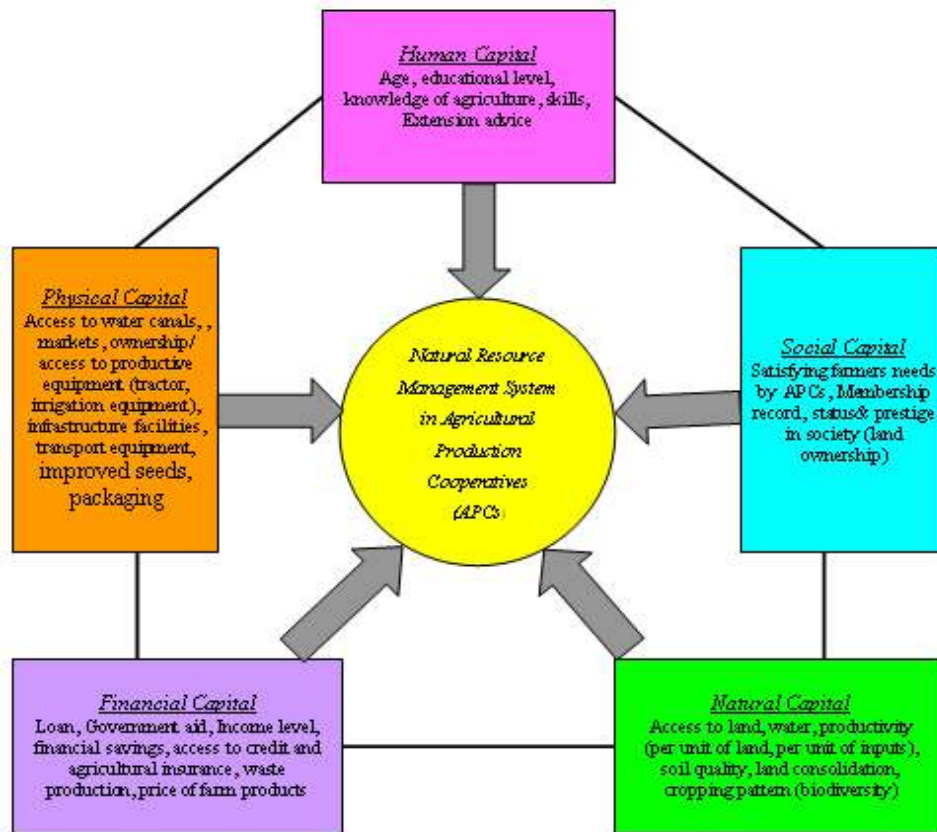


Fig. 1: Research theoretical framework

From the figure 3, it is revealed that the, 53 percent of the APCs members constituted second category with an average score of 38 on the natural capital. It is shown that many of APCs members (83 percent) unsuccessful in access and utilization of natural capital for achieved to sustainable and integrated natural resource management.

In relation to physical capital, 63 percent of APCs members constituted first category with an average score of 13 in this part. It is shown that many of APCs members (85 percent) unsuccessful in access and utilization of physical capital for achieving to Sustainable and integrated natural resource management. It is revealed that Agricultural production cooperatives couldn't prepared facilitates and equipments for their members.

The findings (figure 3) reveal that the 32 percent of APCs members constituted the second category with an average score of 38 on the human capital. It is shown that the 85 percent of APCs members didn't success in access and utilization of human capital for achieved to sustainable and integrated natural resource management.

From the figure3, it is revealed that 55 percent of the APCs members constituted first category with an average score of 13 on the financial capital. It is shown that many of APCs members (82 percent) unsuccessful in access and utilization of financial capital for achieved to sustainable and integrated natural resource management.

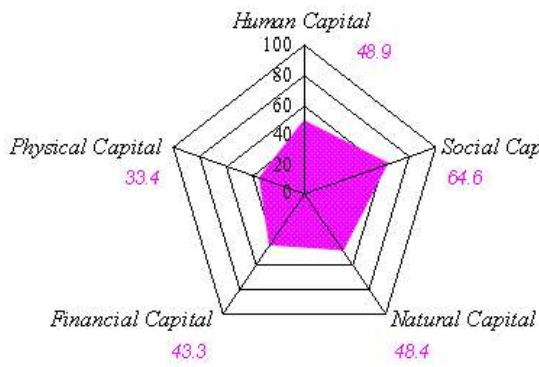


Fig. 2.1: Fars Province APCs Cobweb

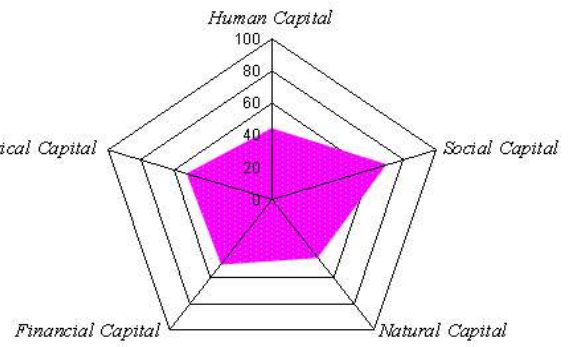


Fig. 2.2: Ali Abad APC Cobweb

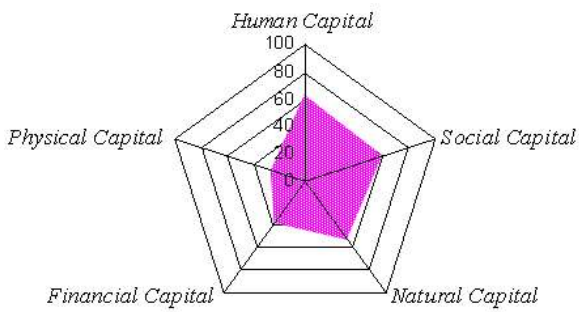


Fig. 2.3: Isargaran APC Cobweb

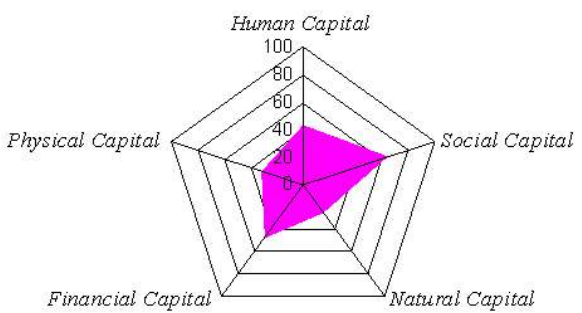


Fig. 2.4: Cheshme Arous APC Cobweb

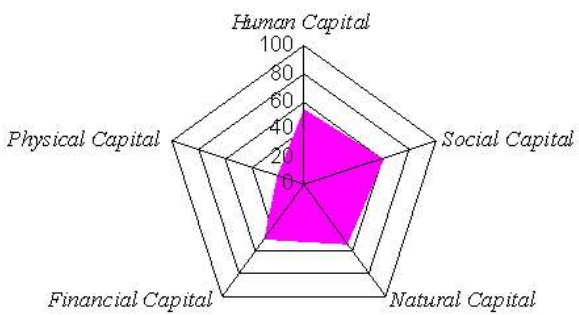


Fig. 2.5: Naghsh Rostam APC Cobweb

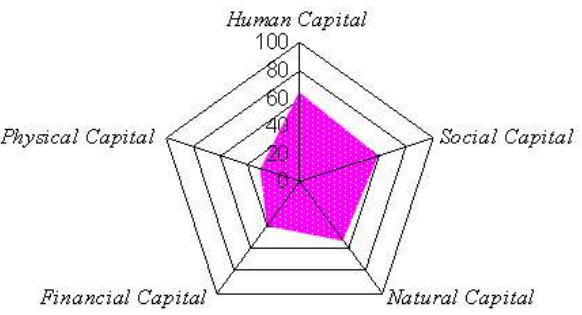


Fig. 2.6: Kalvan APC Cobweb

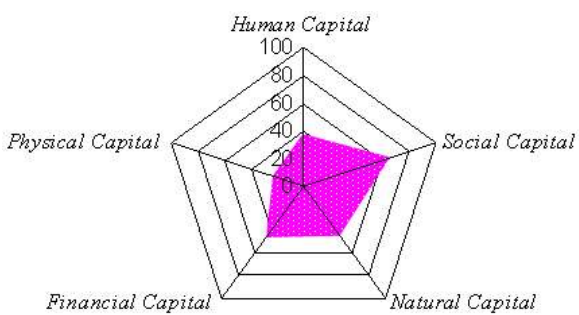


Fig. 2.7: RoodBal APC Cobweb

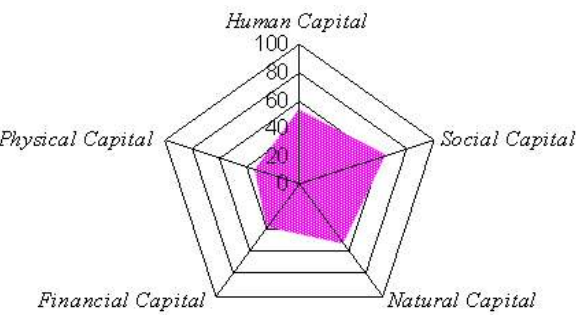


Fig. 2.8: Rahmat Abad APC Cobweb

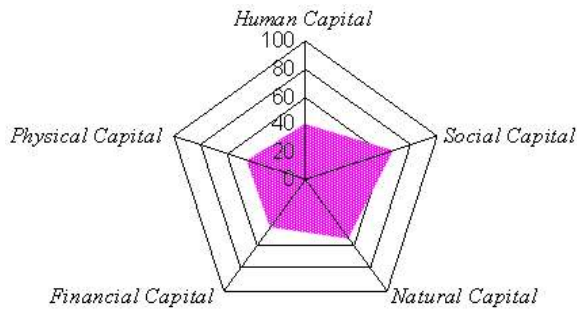


Fig. 2.9: Soghad APC Cobweb

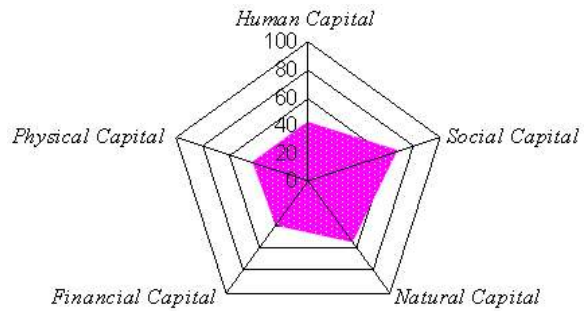


Fig. 2.10: Sabz Dasht APC Cobweb

| Capital | Low | | | | High | | | |
|-----------|------------------------------|-----|-----------------|--|-----------------|--|----------------|--|
| | <i>(Access, Utilization)</i> | | | | | | | |
| Natural | Score 13 30% | | Score 38 53% | | Score 63 12% | | Score 88 6% | |
| Physical | 63% | | 28% | | 6% | | 3% | |
| Human | 30% | | 32% | | 24% | | 14% | |
| Financial | 55 | | 27% | | 14% | | 4% | |
| Social | 15% | 23% | 44 | | 18% | | | |

Fig. 3: Outline of Asset Status Frame work in Fars Province

The findings (figure 3) reveal that the 44 percent of APCs members constituted the third category with an average score of 63 on the social capital. It is shown that the 82 percent of APCs members had a high social capital for achieved to sustainable and integrated natural resource management. This is great opportunity for implementation of NRM programs in APCs.

Conclusions:

This research has considered Sustainable Livelihoods as a holistic framework for identifying Indicators of different types of assets and activities that shape farmers’ management of natural resources. It has found evidence that measures of natural, financial, physical, social and human capital at the level of farm households are correlated with natural resources management, and therefore offer potential indicators of, farmers' success in management of natural resources. In general terms, this research started from the principle that desirable indicators should be locally relevant and easily measurable; should encompass agricultural systems, people’s livelihoods and NRM objectives. Using a model to focus on the key determinants of NRM system in APCs will help agricultural development policy makers and experts to make the best use of the 5 capitals (human, social, physical, financial and natural) that might improve these local organizations. It is important for policy design that the behavior of the model and its empirical relevance are fully understood. The “*Natural Resource Management in Agricultural Production Cooperatives (APCs)*” presented in this article is simple,

although it incorporates the essential ingredients that provide a general framework. This research was based on identifying the fundamental indicators that were key determinants in promoting effective operation of APCs in NRM. Since there were many indicators in NRM, this article focused on 5 capitals in its theoretical model. The collection of NRM capitals can be interpreted and used as a checklist. Managers should think about the relevance of each capital within their own APCs.

Among the 5 capitals in the model, "social capital" that includes Satisfying farmers needs by APCs, Membership record, status and prestige in society (land ownership) throughout the nine sites obtained more score (64.6) than the other capitals. The same was true of "human factors" measured by the Age, educational level, knowledge of agriculture, skills, Extension advice obtained score 48.9. According to social and human capitals in APCs obtained more scores among other capitals; we recommend that APCs managers can claim collective and group action to make better use of their own resources in toward progress of members goals. The first set of cooperative structure variables including the number of members, the area under cultivation, initial capital, the age of the APCs, the number of machines, infrastructure facilities, and self-reliance were the most important factors in explaining the success of APCs in NRM. Focusing on the use of these 5 capitals will have a determining result on effective implementation toward NRM goals. Among physical capital variables, the variables such as Access to water canals, markets, ownership/ access to productive equipment (tractor, irrigation equipments), infrastructure facilities, transport equipments, improved seeds, and packaging equipment are the most important, that APCs manager should pay more attention those. Provision of infrastructural facilities is recommended as a policy to achieve effective performance in NRM.

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