

The Sri-Lankan Construction Industry in the New Millennium

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Abstract

The construction investment in Sri-Lanka has followed the economic changes that took place during the last decade. This resulted in a significant change particularly in the supply side of the construction industry. Projections towards the new millennium reveal that government policies will be the key deterministic factor with its traditional role changing from that of an investor and a regulator to that of a facilitator in construction. While these policies lead to a larger private sector participation in infrastructure and industrial development with increased foreign participation, it has also put the domestic industry under pressure to change due to such developments. As such, the role of the contracting firms together with the project delivery process and project procurement will be subject to change to meet new demand conditions. This new project culture will face many constraints that originate locally from financial, technological and management deficiencies and construction industry development will be necessitated to accommodate new trends in order to be beneficial. Both corporate development and wider industry development will be necessary. This paper reports these new developments against the background of the past performance of the industry and the necessary measures to be taken by the Sri Lankan construction sector to meet those changes. Although the study is primarily confined to Sri Lanka, these findings are also relevant to the construction sectors of other developing countries where similar movements are taking place.

Keywords: Demand and supply trends, Government policies, Facilitator, Economic changes, Construction industry development, Sri Lanka.

INTRODUCTION

This paper attempts to forecast the future outlook of the Sri-Lankan construction industry based on an analysis of factors underlying the changes in the industry. While these factors are brought to establish an insight into the demand trends and production characteristics, further observations are made to identify the factors that are apparent so as to forecast the future operating environment of the construction industry in Sri Lanka. The analytical framework (Fig.1) focuses on demand and supply side factors of the construction industry as discussed by writers such as Stone (1983), Raftery (1996) and Hillebrandt (1985) since they best characterise the operating environment of the industry. The analysis is supported by a literature review, interviews and statistical data.

Past performance of the construction industry

The historical development of the Sri-Lankan construction industry is closely linked with the political changes that took place during the last three decades. In this respect, the significant economic changes can

be categorized into pre- and post-economic liberalization periods. In the pre-liberalization period of 1963-74, the government channelled most investment into the building sector (Table-1) although it implemented several irrigation projects under the patronage of foreign aid in order to create the necessary infrastructure for the agro- based economy in Sri-Lanka. During the period from 1970 to 1977, the economic environment was shaped by the socialist influence. This resulted in restricted private-sector participation in economic development. The adoption of fixed exchange rates made it difficult for the many industrial activities, which faced problems including difficulties in the importation of materials. This badly affected foreign investments in the country.

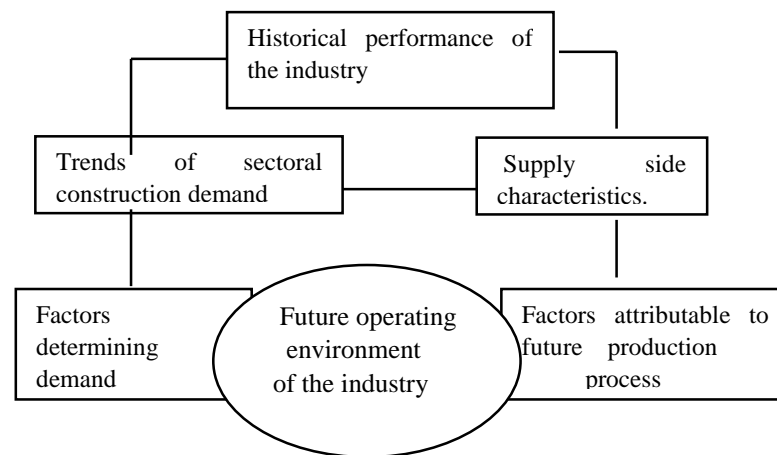


Figure 1: Analytical Framework.

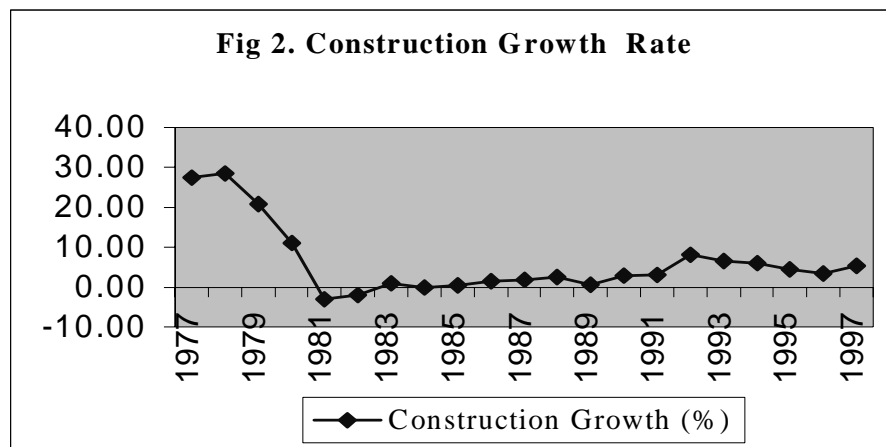
Table 1. GDP and Construction output in Sri Lanka, 1963- 74

Year	Construction output in 1963 prices Rs. Million				
	GDP	Dwellings and Buildings	Other Construction	All Construction Rs	US\$
1963	6,886	420	196	616	8.21
1964	7,186	365	203	568	7.57
1965	7,394	512	202	714	9.52
1966	7,568	512	217	730	9.73
1967	7,948	547	222	769	10.25
1968	8,505	615	232	846	11.28
1969	8,956	739	232	971	12.95
1970	9,718	842	244	1,087	14.49
1971	9,744	950	142	1,092	14.56
1972	10,229	997	87	1,084	14.45
1973	10,752	1,143	124	1,266	16.35
1974	11,179	886	143	1,029	13.72

1 US \$ = Rs. 75.00 (Source: Ganesan S., 1978)

With the liberalisation of the economy in 1977, the Sri Lankan construction industry once again underwent a significant change. During this period, public investments were channeled into major infrastructure projects such as the accelerated Mahaweli programme, Greater Colombo Economic Commission and Urban Development Programme with a view to creating a capital base in the country. Private and foreign capital was boosted through the provision of incentives and infrastructure support. During 1978-1981, this change led the construction sector to grow at a much faster rate of 14.3% at peak of the public sector investment, which coincided with private sector investment in commercial and industrial buildings (Fig.-2). A moderate growth period from 1983 to 1988, was followed by an economic boom in the first half of 1990s during which the construction output grew again. This was due to the strong demand for commercial outlets

and private investment in high-rise office and apartment complexes. At its peak in 1992, the construction output growth reached 8.1 % (Fig.2).



(Source: Central Bank of Sri Lanka, 1998b)

Trend of construction demand

According to Hillebrandt (1985) and Raftery (1991), construction output can be selected as an important indicator of the level of demand for construction. Further, demand originates from different sub-sectors such as public housing, public-sector non-housing, owner-occupied housing and private-sector industrial and commercial, rehabilitation, improvements, repair and maintenance (Raftery, 1991). However, only housing, industrial and infrastructure sectors largely contribute to the construction output in Sri Lanka. It is therefore in this light that output in those sub sectors are analyzed to review the trend of construction demand during the period from 1985-1994.

Public housing programme implemented from 1978 to 1994 resulted in significant demand from the housing sector. The demand increased gradually from 1990 owing to two such programmes (Table-2) carried out during 1985-1996. Further housing programmes launched by related ministries and state agencies also created considerable demand. They were implemented on the 'support-based approach', completing 22,841 and 25,727 units in 1996 and 1997 respectively.

Table 2 - Public Sector Housing Construction
(Under (A) One Million Programme & (B) 1.5 Million Programme)

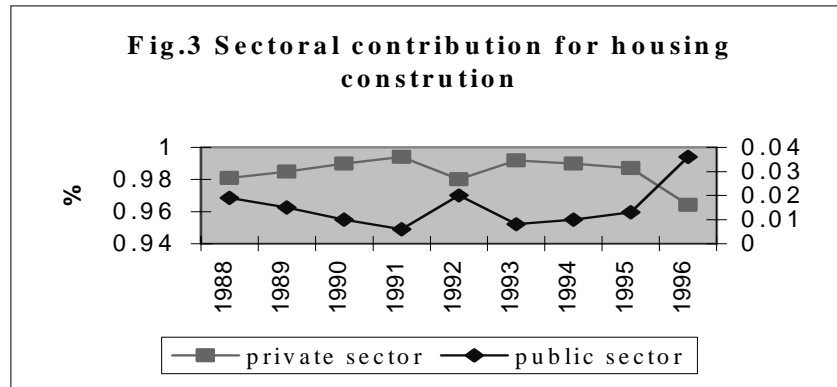
	YEAR	UNITS COMPLETED		EXPENDITURE	
		Urban	Rural & Other	Rs. Mn.	US\$
(A)	1985	2,314	4,135	269.6	3.59
	1986	6,751	49,793	348.7	4.65
	1987	7,839	42,245	299.0	3.99
	1988	6,847	33,393	105.2	1.40
..	1990	2,954	21,895	121.2	1.62
	1991	5,643	35,419	688.9	9.19
	(B) 1992	4,077	39,211	770.2	10.27
	1993	5,652	44,485	912.0	12.16
	1994	4,764	37,166	730.1	9.75

1 US \$ = Rs 75.00 (Source: Economic Review, June/July 1995)

The housing requirement in the country was also largely met by the private sector during the period 1988-1996 (Fig.-3). The emergence of private property development companies made a considerable impact on construction demand in this sector, particularly in urban areas where demand grew rapidly with the

expansion of the urban population. As a result, condominium style apartments and pre-built luxury housing schemes were built in urban/suburban areas.

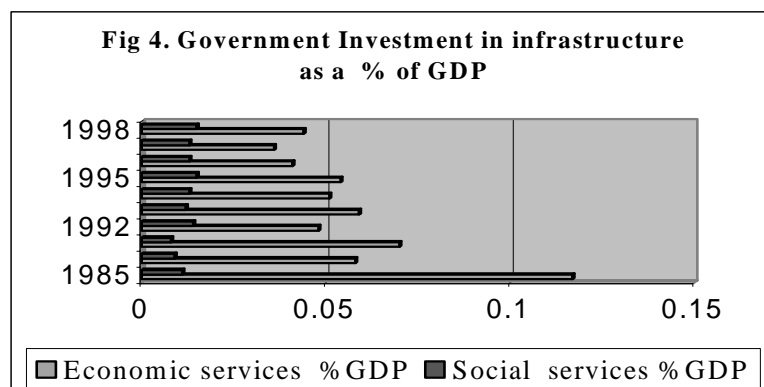
The construction of approximately 5000 residential units constructed by 11 private-sector developers with an investment of approximately SLR 9860 million (US\$ 131.47) during 1994-1997 under the Board of Investment in Sri Lanka, boosted this sector. The cost of construction, land supply and available sources of finance, project delivery systems had a direct bearing on the demand in this sector.



(Source: Central Bank of Sri Lanka, 1998b)

In addition to housing, the public-sector investment was channeled to infrastructure such as irrigation facilities, and urban development to accommodate economic expansion. In the recent past, from 1990 to 1998, the government's investment has been more towards infrastructure, showing a record average of 5.12% of GDP for the period of nine years (Fig. 4). However, this growth-initiated investment in construction has been cyclical in nature due to variance in budget allocation and availability of foreign aid (Central Bank 1998b). With respect to the private sector industrial and commercial buildings a significant derived demand emerged with the establishment of Free Trade Zones, (an area for investment by expatriate businesses with government incentives). Infrastructure development in three such zones (Katunayake 1978, Biyagama 1986 and Koggala 1991) amounted to SLRs. 1406 million (US\$ 18.75) (Economic Review, 1994).

The government also offered incentives to promote private investment and this led to a considerable increase in investment in industrial, commercial and shopping complexes. During 1989-1999, private developers completed 16 office buildings at a cost of SLRs. 5.61 billion (US\$0.075 billion) under this incentive scheme. Currently, the developers faced many problems including high land prices in the metropolitan region, high construction cost and high cost of finance.



(Source: Central Bank of Sri Lanka, 1998b)

Supply side characteristics of the industry

The operation and behaviour of the construction firm, price determination for construction projects, the design process and the forecasting of construction prices reflect the supply side of the construction industry. (Raftery, 1991; Briscoe, 1988). On the other hand sub-contracting practices, sourcing of materials; labor and plant are of vital importance to the construction output in the industry. The following analysis reveals how the captioned demand conditions affected the supply side characteristics of the industry taking these criteria into consideration.

According to the revised National Registration and grading system for contractors in Sri Lanka, the total number of registered contractors in 1999 was 1913. There are more smaller firms in the industry and only 8% of the contractors are capable of undertaking projects worth above SLR 10 million (US\$0.133) (Table-3). This is one of the major reasons for the greater share of donor-assisted projects being carried out by expatriate contractors.

Table 3. Sri Lankan Contractors Graded by ICTAD by 1999

Grade	Financial term (Rs Million)	No. of Contractors
M1	300 - Above	7
M2	150-300	13
M3	50-150	25
M4	20-50	44
M5	10-20	60
M6	5-10	178
M7	2-5	652
M8	1-9	406
M9	0-1	518
M10	0.0-1	10

(Source: Institute of Construction Training and Development, ICATD)

Most of the construction firms obtain a high percentage of their work through competitive bidding (Dias et al, 1998) and the nature of client is a key factor affecting both bid/no-bid and percentage mark-up decisions. According to Dias et al (1998), the most preferred job size is in the range of Rs. 10 million to 25 million (US\$0.13-0.33). This explains why there are a large number of small and medium scale contractors in Sri Lanka's construction industry. However, to minimize the repercussions of the cyclical nature of construction demand and also to achieve flexibility, local contractors have resorted to the use of subcontractors.

With respect to the construction workforce, it has been found that a significant portion of them is casually employed and have had no proper training in any trades (Jayawardane, 1998). A survey on 3300 construction workers and 56 direct construction related agencies by Jayawardane et al (1998) revealed that the workforce consisted of 51% unskilled workers, 33% masons, 10% carpenters and 1-2% each of plumbers and electricians. While the Sri Lankan construction industry is primarily a labor-intensive sector, trends in plant utilization have emerged in road, telecommunication water supply and sanitation projects. The availability of plant and machinery has marginally improved. Contractors have moved away from labor-intensive construction methods to the use of capital-intensive operations such as the use of pre-fabrication systems, and ready mixed concrete in high-rise buildings. This trend has been prompted by the demand for private housing commercial and industrial buildings. The marginal increase has been mainly due to contractors finding it difficult to invest in such equipment due to the devaluation of the local currency against the US dollar, and high interest rates in Sri Lanka (ICTAD, 1997).

The prices of local building materials have also risen due to inflation and the currency devaluation. The sector has been concerned about the poor quality and frequent shortages of materials (ICTAD, 1997). The quality of some critical materials such as cement and steel has now improved due to regular imports and

private-sector manufacturing while the prices of materials such as timber, sand and coarse aggregate have escalated by more than 200% since 1990. The production of materials such as sand, lime and aggregate is now regulated by environmental policies. The high cost of construction, increased inflation (nearly 60% increase since 1990), together with the high cost of finance has hampered the growth of construction growth, and has badly affected the individual house developers and the investors in infrastructure.

In terms of project procurement, both the private and public sector clients widely followed the traditional procurement systems. However, the demand characteristics have resulted in non-traditional project delivery systems such as design and build and its variants such as turnkey and more recently BOO/BOT arrangement. According to Senavirathne (1997), in the trend of procurement arrangements during the period 1977-97, "measure and pay" continued to be a widely used procurement route while non-traditional methods like design and build, lump sum and prime cost had also gained recognition in the industry (Table 4). The growth of the industrial sector has necessitated the use of design and build while the "measure and pay" type has been used in the majority of construction work particularly in public-sector projects (Senavirathne, 1997).

Table 4. Trends in contractual procurement arrangements (1997-1997)

PROCUREMENT route	Period			
	77-82	82-87	87-92	92-97
Measure and pay	55.00%	50.00%	58.50%	46.00%
Design and Build	14.00%	26.00%	24.00%	30.00%
Lump-sum	12.00%	10.00%	8.00%	7.50%
Prime-cost	10.00%	8.00%	5.00%	4.00%
Design and Manage	8.00%	5.00%	4.00%	3.00%
Mgt. Contracting	1.00%	1.00%	0.50%	1.00%
Joint Venture	0.00%	0.00%	0.00%	2.50%

The government's policy of transferring its dominant role to the private sector required the development of legal systems and institutional structures to regulate the activities of the private sector. As such, in 1986 the Institute of Construction Training and Development (ICTAD) was set up to develop the industry in the areas of training, research and registration of contractors and consultants, contract conditions and other standards necessary for the industry. To ease the constraints faced by the contracting sector, initiatives were also taken by the government in Cabinet paper 116 of 14.08.1988 to introduce reforms. It addressed four key issues, namely poor construction management, insufficient workload, lack of continuity of work, delays in payments to contractors, and inadequate system of financing of contractors. Although the proposals aimed at the development of the local constructing sector, the inefficient implementation of reforms led to the failure of the sector to achieve the required levels of development (Sritharan, 1995).

Future demand determinants

The government's policies will be the key factor to stimulate different demand conditions in the future. For example, the move by the government to involve the private sector participation in infrastructure and BOO/BOT projects is taking place in the power and telecommunications sectors. Further, it has initiated the use of "fast tracking" in the construction of industrial estates and the export processing zones. The main facilitating body, the BOI, has been assigned SLRS 1.5 billion (US\$0.02 billion) to accelerate the development of such projects. The foreign direct investment (FDI) inflows in 1998 rose by 20% compared with 1997, to reach an estimated US\$155m and the construction of 143 new approved BOI projects were commenced in the first ten months of 1998 (34% higher than the same period of 1997) (EIU 1999). With the implementation of BOO/BOT infrastructure and other high-rise commercial developments, FDI in construction is expected to grow further in the early part of the this decade.

With respect to the future housing needs the Presidential Task Force (1998) recognized that the urban population will reach 65% of the total population by 2030 and the projected requirement of housing in the year 2005 is 512,000 in which urban requirement is 322,500 units. In order to achieve this target, the active

participation of private sector property developers needs to be sought to construct large-scale vertical and horizontal housing development by providing buildable land with infrastructure facilities.

However with respect to political stability, the status of the ongoing civil conflict will be a key determinant of the country's long-term development prospects. Successful conclusion of the conflict will lead to high rates of growth, thus offering the potential for sustained growth in construction. Foreign assistance is critical to Sri Lanka to achieve the desired level of public investment and at present foreign aid accounts for approximately 50% of the government's capital budget. The funding agencies support mainly major infrastructure projects and social development. It is estimated that the current annual expenditure in construction is SLR 80 billion(US\$1.07billion), of which 75% is donor funded (Munasinghe, 1998). As such planned investment in different infrastructure sectors (Table-5) is mainly to be met by means of foreign aid/loan in the next few years.

Table-5. Public Sector planned investment in infrastructure

Sector	Planned Investment	Planned investment in US\$
(1) Transport infrastructure (Expressway -184km total)	US\$ 570-600 Mn	US\$ 570-600Mn
(2) Electricity (Generation –Hydropower)	SLRs.43,050 Mn	US\$ 574Mn
(3) Port development	US\$ 400 Mn	US\$ 400Mn
(4) Water supply project	SLRs.21,980 Mn	US\$ 293 Mn

(Source: ICTAD, 1997)

Nature of the future supply environment

In future, construction demand will require the packaging of services that provide a single source solution to client requirements thus requiring co-operation in the project delivery process based on partnering relationships. In this context, firms will seek integration to provide entire project services with horizontal integration, strategic alliances, joint ventures or consortia to combine strengths to become a single source problem solver for the client, such as on BOO/BOT project developments. As a result, foreign contractors will be increasingly involved in Sri Lanka's construction industry. However, local contractors' financial capacity and absence of previous experience will be constraints to their formation of joint ventures with their foreign counterparts. The increasing demand for development financing will change the industry from being a service provider into the client. The firms will have to utilize their financial capacity and project financing skills to identify opportunities to develop projects and then transfer its ownership. The newly established funding arm PSIDFC provides subordinate loans to strengthen the financial position of such developers to enable them to participate in private-sector infrastructure development in Sri Lanka.

While the construction industries in most countries are being transformed from labor-intensive industries to knowledge intensive ones, the Sri Lankan construction industry will still seek appropriate technology with maximum labor absorption depending on the government's policies for the industry. However, with the government's interest in the development of high-tech applications, the construction industry should be poised to receive special incentives to encourage contractors to substitute labour-intensive technologies with capital-intensive ones. Furthermore, new technological applications will be tested by expatriate contractors particularly on donor-assisted and private sector financed projects in the absence of medium-sized projects within the capacity of local firms.

Trends for construction automation, mechanization and optimum plant utilization will be generated from the demand for high quality and cost effective construction. The introduction of local and international standards together with standard conditions of contract to meet the quality and time targets will also generate the demand for mechanization in the industry. Trends in prefabrication and standardization will reduce the traditional construction component thus seeking low-cost and time saving construction even in the housing sector. Favourable economic conditions will result in high import content of materials and heavy use of

construction equipment, necessitating technological changes in the construction process particularly in the industrial and commercial sectors. There will be a shift of demand from buying fragmented engineering and construction services to packaged services that provide a single-source solution. This will be enhanced by the BOI concession available for duty-free imports of plant, machinery, raw materials and other project-related goods and these will be the driving forces for such technological changes.

With respect to the other production characteristics, it can be observed that there will be a growing concern about pollution and global environmental issues. At the project level this is being implemented with Environmental Impact Assessment (EIA) and sustainability concepts adapted by designers. This will continue to be built into future urban and human settlement development programmes. The production of construction materials such as sand, lime and aggregate will increasingly be of concern due to possible environmental degradation during their production. As a result, the low-cost pre-fabricated housing industry will be badly affected due to the reduction in the quantum of raw materials generally generated by the cottage industries.

CONCLUSION AND RECOMMENDATIONS

The development of the Sri Lankan construction industry has closely followed the economic changes during the past decade. The economic conditions were the main factors, which influenced demand trends in the industry. The demand trend resulted in many changes on the supply side of the industry and the production characteristics improved gradually over the period. The government's role has changed from that of being an investor to that of acting as a facilitator and private-sector led construction demand is predicted to predominate in future. As a result, private-sector participation in economic infrastructure, industrial and commercial development is expected to dominate the industry with the involvement of expatriate contractors as service providers rather than traditional contractors. While forecast economic growth, urbanization trends and foreign aid may create healthy demand; the increasing cost of construction will have a negative impact. The construction firms are under pressure to change their business strategy to meet the future demand conditions, particularly to accommodate technological changes and the changing nature of the project delivery process.

The analysis of the supply side characteristics of the Sri Lankan construction industry reveals that the nature of underdeveloped construction industry framework and the new project culture will pose many difficulties constraints that originate locally due to financial, technological and management deficiencies of the local firms. Hence, development measures are needed to meet the challenges to benefit from new development in construction. Institutional reforms and capacity building and the legislative measures for regulating construction industry activities and motivation of local contracting community to effectively participate in the implementation of large scale donor-funded and private sector funded projects are priority areas of concern.

The Sri Lankan government is in the process of planning these measures to introduce a regulating framework to make the construction industry more effective and efficient. Under the proposed construction bill, a new agency, the Construction Industry Development Authority, will be established once the Act takes effect. Under the provisions of the proposed Construction Bill, expatriate contractors will need to form joint ventures with local establishments even on donor funded projects, and it will pave the way for capacity development in local firms through technological and managerial advancements. However, a proper institutional support will be crucial to oversee such ventures in the domestic industry in order to achieve the desired objectives.

Further developing a strong structural base for the Sri Lankan construction industry through manpower training and appropriate construction resources will be another challenge for the next millennium. This is particularly important with the expansion of the industry since more craftsmen and equipment operators are needed to maintain a skilled, competitive and adequate workforce to meet the new demand in the industry. The local building material sector has not gear itself to complement the construction activities of the country. The indigenous materials industry such as bricks, aggregate, tiles and sand is experiencing gradual

decline in production. Immediate attention is required to develop the local building material sector because if this sector is not adequately developed and the quality of materials is uncertain, the designers will continue to select and specify items with high import content at the expense of domestic building material sector.

The government's intervention is also necessary to regulate the industry in terms of its performance, standards and the quality of the services it provides. Additional policy initiatives are required to assist the domestic contractors to secure overseas projects for capacity development in new types of projects. In this context, the introduction of the construction industry Bill will help to achieve such developments envisaged for the new millennium. The proposed Bill focuses on policies affecting contractor development, registration of contractors and consultancies, technical auditing and monitoring of the construction programmes in the country, construction contract procedures and documentation, construction services imports and exports. These measures will be the way forward for Sri Lanka in the context of the changing nature of the construction sector in the new millennium.

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