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Evaluation fo the Implementation of the Domestic Component Level Policy on Construction Projects in Indonesia: Case Study of Indoor Multifunction Stadium in Jakarta

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Abstract

This research evaluates the implementation of the Domestic Component Level (TKDN) regulation in the Indoor Multifunction Stadium Construction Project in Jakarta to support national economic growth by increasing the use of local products in construction projects. The objectives of this study are to determine the percentage of domestic component use, identify factors that influence the implementation of TKDN, and analyze the main challenges in implementing the policy. The research method involved project and survey data analysis, with the Relative Importance Index (RII) method to assess the dominant factors that play a role in the implementation of TKDN. The results showed that the percentage of local product contribution in this project was 55.80% with a target achievement in accordance with the regulation of 60% with the dominant constraint factor being local product certification. This research is expected to support the TKDN policy on construction projects in Indonesia, strengthen the involvement of domestic industries, and provide input for policymakers to improve the effectiveness of the implementation of this policy.

Introduction

Infrastructure development plays a significant role in a country's economic growth and social development. Jakarta as the economic and cultural center of Indonesia continues to experience rapid growth in infrastructure, including the construction of sports buildings to support recreational activities and competition. This includes the Indoor Multifunction Stadium Development Project in Jakarta. The infrastructure development of Indoor Multifunction Stadium basketball sports facilities and infrastructure is part of the support for fostering athletes to excel at the international level, therefore the specifications used must meet the international standards set by FIBA (Varmus et al., 2021).

Following the Presidential Instruction, "Presidential Instruction 2/2022 on the Acceleration of Increasing the Use of Domestic Products and Products of Micro, Small and Cooperative Enterprises in the Context of the Success of the National Movement of Proud to be Made in Indonesia in the Implementation of Government Procurement of Goods/Services", the Ministry of Public Works and Public Housing of the Republic of Indonesia determines the minimum limit of the value of the Domestic Component Level (TKDN) in construction work, consulting services, and integrated construction work used by the Commitment Making Officer as a reference in determining the minimum limit of the TKDN value required in the selection document regulated by: Decree of the Minister of Public Works and Public Housing Number: 602/Kpts/M/2023 concerning the Minimum Limit of Domestic Component Level in

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Construction Services. According to Mohammadi et al. (2022) and Rondinel-Oviedo (2023) that the minimum limit of the value of the domestic component level of construction services for the field of Development, Rehabilitation, and Renovation of Sports Infrastructure Facilities is 60% which is the minimum benchmark that must be met in the Indoor Multifunction Stadium Development Project.

The use of domestic products in construction projects has a significant impact on local economic growth, domestic industry development, as well as job creation (Dell'Anna, 2021; Schroeder et al., 2019). Economically, prioritizing domestic products allows capital flows to remain in the country, encourages the growth of related industry sectors, and increases the contribution of the construction sector to the country's Gross Domestic Product (GDP) (Saka & Olanipekun, 2023; Alaloul et al., 2021; Ngan et al., 2019). In addition, using domestic products can also increase a country's economic independence and sustainability by reducing dependence on imports, as well as reducing the risk of price and supply fluctuations from foreign markets (Ministry of Industry of the Republic of Indonesia, 2020).

The government argues that the implementation of the domestic component rate policy aims to increase the effectiveness of government spending in improving national welfare, building economic independence, providing better protection from external economic shocks, and achieving the long-term goal of achieving development and a stable economy (Chugunov et al., 2021; Moshashai et al., 2020). In its implementation, the implementation of TKDN faces various complex challenges, such as limited production capacity, inconsistent quality of local products, and minimal understanding of TKDN regulations by procurement actors. In the Ministries of Education, Culture, Research, and Technology, which often conduct large-scale procurement, these challenges often arise, making it important to evaluate the extent to which the TKDN policy can be effectively implemented (Hidayat et al., 2024).

Socially, the use of domestic products can create local employment opportunities, strengthen communities, and improve the living standards of the local workforce (Peinado-Vara, 2022; Suman, 2021). It can also increase market accessibility for local producers, including small and medium-sized enterprises (SMEs), which in turn will promote economic inclusion and reduce economic disparities between regions (Al-Haddad et al., 2019). Thus, the selection of domestic products in construction projects not only supports economic growth but also promotes sustainable and inclusive social development (Fei et al., 2021; Kalkanci et al., 2019). Analyzing the level of domestic components in such construction projects is important as it has a direct impact on the domestic economy and the domestic construction industry.

Based on the case study of local content implementation in Tanzania, 50% of respondents suggested that local capacity development should be prioritized to improve local skills and expertise so that locals can participate in the extractive sector. Other recommendations included creating a local content policy that applies across all sectors of the country's economy and providing opportunities for government staff to attend training and study mining so that they understand LC and best practices from other countries (Cascio, 2019; Hamid, 2020). In addition, involving local residents in the creation and review of local content policies, and providing loans for residents to increase their financial capacity in the extractive sector supply chain (Kinyondo, 2024).

The implementation of TKDN in Indonesia faces several obstacles, one of which is the quality of TKDN-certified products that are not necessarily comparable to imported products with similar specifications. As a result, the need for procurement of goods and services can increase, which then has an impact on the increase in the price of these products (Hidayat et al., 2024). The TKDN policy also requires multinational companies to use a certain percentage of local materials and components to encourage the improvement of the domestic industry (He et al., 2022). On the other hand, to maintain the quality of final products produced

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in developing countries, multinational companies need to transfer technology to domestic industries that produce local components. Therefore, TKDN is a popular policy of developing country governments relating to foreign investment Esty Hayu, 2012).

The growth of the national construction industry and government policies related to the utilization of local resources also affected the construction project of the Indoor Multifunction Stadium in Jakarta (Luerdi, 2023). Through the analysis of the level of domestic components, it can be understood the extent of local contribution to the construction project as well as the potential to increase the utilization of domestic resources (Omar & Mahdjoubi, 2022). The use of local products in the Indoor Multifunction Stadium construction project in Jakarta certainly should not compromise the needs of international standards set by FIBA. This is a challenge for local service providers to realize international standard construction while still using local products in the country.

Methods

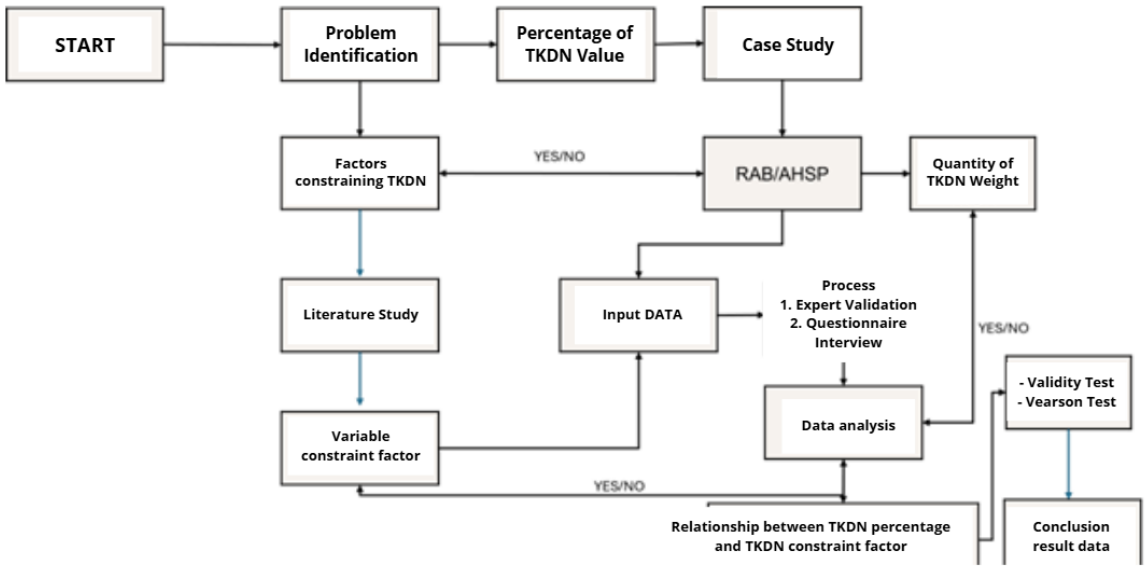

Figure 1. Flowchart of Research Flow

Research Variables

At the initial stage based on the case study, validation has been carried out on the work components used for the TKDN calculation on the Indoor Multifunction Stadium Construction Project. The work components used as the basis for the calculation of TKDN in this project are as follows:

Table 1. Variable Stages of Work TKDN Value

X1.1	Licensing Work
X1.2	Preparatory Work
X1.3	Occupational Safety and Health Management System (SMK3)
X1.4	Periodic Planning and Supervision
X1.5	Construction Work
	- Structure Work
	- Architectural Work
	- Interior Work
	- Roof and Façade Work
	- Landscape Work

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	- Game area work
	- MEP work

Source: Research, 2024

The TKDN value per item can be found by entering it into the formula set by the Regulation of the Minister of Industry of the Republic of Indonesia Number: 16/M-IND/PER/2/2011 concerning Provisions on TKDN Calculation Procedures. The concept of calculating TKDN (Level of Domestic Component) based on the Regulation of the Minister of Industry Number 16 of 2011 concerning the calculation of the percentage of domestic components in a good or service in a project, aims to support the use of local components in Indonesia. The flow in the process of calculating the TKND value in the construction process of the Indoor Multifunction Stadium Development can be described in the flowchart below.

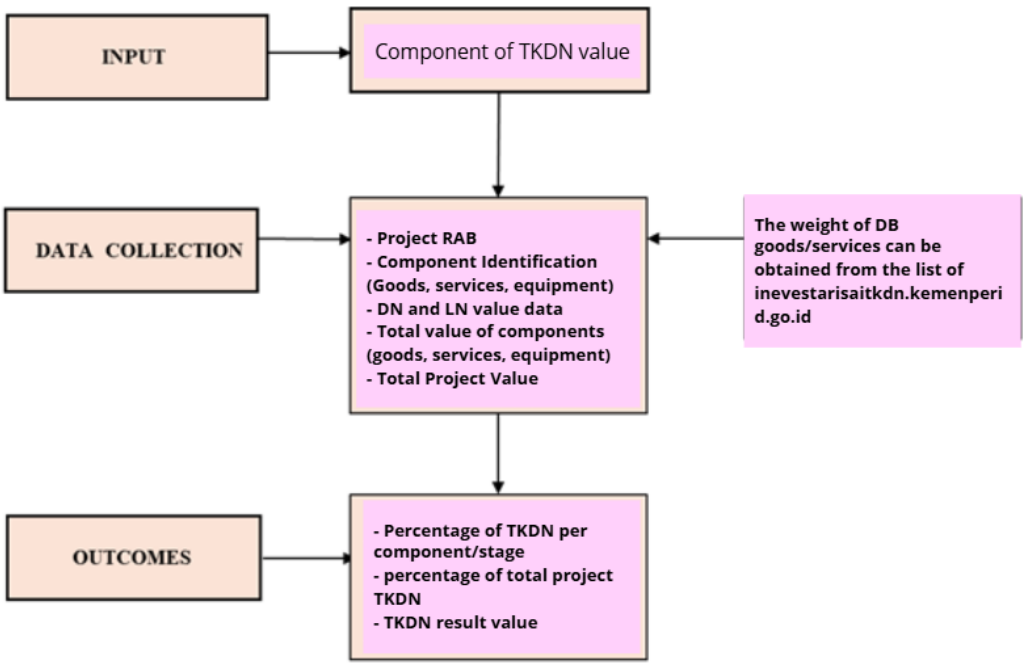

Figure 2. TKDN Calculation Process According to Permen Perind 16 of 2011

The project Budget Plan (RAB) is indeed needed as initial data in the process of calculating the Domestic Component Level (TKDN) for the construction of the Indoor Multifunction Stadium. Each stage of the construction of the Indoor Multifunction Stadium has a total value of the Budget Plan Cost (RAB) which directly affects the percentage of the Domestic Component Level (TKDN). To achieve TKDN assessment at each stage of the work there is a way of calculating goods, services, and a combination of goods and services from the work so that it is formulated:

Services:

$$\%\text{TKDN Services} = \frac{\text{KDN Production Cost}}{\text{Total Production Cost}} \times 100\%$$

Item:

$$\%\text{TKDN Item} = \frac{\text{KDN Production Cost}}{\text{Total Production Cost}} \times 100\%$$

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TKDN Value of Licensing Stage

The calculation of TKDN Value at the Licensing Stage is the value of the Licensing work. The assessment carried out on preparatory work is a percentage of service work so that the %TKDN Services formula is obtained.

TKDN Value of SMKK Work

The calculation of the TKDN value in SMKK work is the value of SMKK work. The assessment carried out on preparatory work is a percentage of the unit of goods so that the %TKDN formula is obtained.

TKDN Value of Periodic Planning and Supervision Stages

The calculation of TKDN value in the work of Periodic Planning and Supervision Stages is the value of Periodic Planning and Supervision work. The assessment carried out on preparatory work is a percentage of service work.

TKDN Value of Construction Work Stages

The stages of TKDN assessment at the construction stage include structural, architectural, interior, roof and facade, landscape, game area, and MEP works, for construction implementation work, the calculation usually includes all aspects of goods, services, or goods.

In the initial validation stage of the constraints factor of the application of TKDN, there are 19 sub-indicators of research variables that become obstacles in the application of TKDN in the Indoor Multifunction Stadium Construction Project. Furthermore, the 19 variable sub-indicators were validated against 5 experts involved in the project to be validated so that 17 variables were obtained which would be distributed to respondents. The variable indicators of constraint factors on the object of research on the Indoor Multifunction Stadium Construction Project that have been validated by 5 experts are as follows:

Table 2. Research Variables Constraint Factors

Variable Code	Variable Name
1. Readiness of Domestic Producers	
K1	Local Production Capability
K2	Quality of local products compared to imports
K3	Availability of local products
K4	Use of local and imported raw materials
K5	Price of local products compared to imports
2. Local Product Certification	
S1	Knowledge about local product certification
S2	Registration of local products on the P3N website
S3	Foreign License for local products
3. Human Resources	
M1	Quality of local labor compared to imports
M2	Lack of adequate training
M3	Knowledge of construction service providers about TKDN regulations
M4	Construction service providers' knowledge of TKDN calculation procedures
4. Government Policy	
P1	Investor interest in financing projects with exclusive policies on domestic producers
P2	Effect of TKDN policy on construction project quality
P3	Effect of TKDN policy on construction project cost

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5. Technology	
T1	Readiness of local technology to compete with international qualifications
T2	Research and development-based technology in Indonesia

Research Source, 2024

In this study, to measure and test variables using a Likert scale. There are 5 variations of assessment of the constraints that affect the application of TKDN. The Likert scale variation measures the influence of each variable that has been obtained for testing on 20 respondents. The Likert scale assessment of this study is as follows:

Table 3. Likert Scale

Value	Kode	Assessment	Assessment Characteristics
1	TB	Not Affected	Constraint factor points do not affect the TKDN Value
2	KB	Less Influential	Constraint factor points less influence the TKDN Value
3	B	Influential	Constraint factor points affect the TKDN Value
4	CB	Moderately Affected	Constraint factor points moderately affect the TKDN Value
5	SB	Very Influential	Constraint factor points strongly influence the TKDN Value

Source: Author's Report, 2024

Results and Discussion

Qualitative Analysis

Based on the quantitative analysis of project case study data from each stage carried out and the results of the TKDN calculation, the results of each stage of TKDN work on the Indoor Multifunction Stadium Construction Project in Jakarta are as follows:

Table 4. Stages of Work Project TKDN Value

Job Description	Percentage of TKDN
Preparatory Work, Planning, and Periodic Supervision	2,22%
Structural Work	32,98%
Architectural work	7,64%
Interior work	0,57%
Roof and façade works	2,66%
Landscape work	2,09%
Game area work	0,31%
MEP work	7,33%
Total	**55,80%**

Source: Author's Report, 2024

The total percentage of TKDN from all stages of work on the Indoor Multifunction Stadium Construction Project in Jakarta is 55.80%. The largest percentage component value in the implementation if the overall TKDN calculation simulation is carried out is structural work, which is 32.98%, this is because the weight of structural work in this project is the largest value.

Quantitative Analysis

Data Sufficiency Test

Data Sufficiency Analysis Test The data sufficiency test is needed to ensure that the data collected is based on the same system. The data sufficiency test uses Slovin's Formula. The data sufficiency test using Slovin's Formula is carried out when the researcher wants to know

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the number of samples needed to represent the population as a whole. This method is used in studies that use questionnaires as data collection instruments (Robbins et al., 2018).

$$n = \frac{N}{1 + Ne^2}$$

Where :

n = sample size; 19.05 = 20 samples

N = total population ; 20

Population e = expected error; 0.05

The error used is 5% because it is an acceptable error rate in quantitative research. Thus a minimum of 20 respondents are needed to fill out the questionnaire.

Validity and Reliability Test

The validity test is used to measure how precisely a measuring instrument is able to perform a function, while the reliability test is used to measure the consistency of the measuring instrument if the measurement is repeated. For the reliability test using Cronbach's alpha method, where the research is said to be reliable if the alpha value is greater than the critical r-value of the product moment (Röseler et al., 2020). The provisions of the reliability test with the Cronbach's alpha method are as follows: (a) Cronbach Alpha value ≤ 0.6 indicates that the research questionnaire is not reliable; (b) Cronbach Alpha value ≥ 0.6 indicates that the research questionnaire is reliable. As for being able to determine the level of reliability of the questionnaire by looking at the Cronbach's alpha value is as follows:

Table 5. Scoring for Cronbach's Alpha

Alpha	Reliability Level
0.00 s/d 0.20	Less Reliable
>0.20 s/d 0.40	Somewhat Reliable
>0.40 s/d 0.60	Moderately Reliable
>0.60 s/d 0.80	Reliable
>0.80 s/d 1.00	Very Reliable

Source: Author's Process, 2024

The following are the results of the reliability test on the respondent's questionnaire.

Table 6. Reliability Test Results

Cronbach's Alpha	N of Items
0,965	17

Source: Author's Process, 2024

In the table above, it can be seen that the Cronbach's alpha value is 0.965, so it can be concluded that the questionnaire tested is reliable because the Cronbach's alpha value is greater than 0.8 and the reliability level of this study is very reliable because the Cronbach's alpha value is between > 0.80 to 1.00.

Furthermore, the validity test was carried out using the corrected item-total correlation value with the test conditions as follows: (a) If the corrected item-total correlation> r table, then the variable is valid; (b) If the corrected item-total correlation < r table, then the variable is invalid. In this study, the r table is seen at the 95% confidence level or 5% significance for a 2-sided test with 20 respondents, so it has an r table worth 0.444. The following are the results of the validity test on 17 research variables.

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Table 7. Validity Test

Variable	Scale Mean if item deleted	Scale Variance if item deleted	Corrected item-total correlation	Cronbach's Alpha if Item Deleted	Conclusion
K1	61.70	186.092	0.801	0.963	Valid
K2	61.40	178.934	0.715	0.965	Valid
K3	61.60	182.221	0.696	0.965	Valid
K4	61.05	178.674	0.832	0.962	Valid
K5	61.05	179.621	0.797	0.963	Valid
S1	61.05	192.155	0.533	0.966	Valid
S2	61.35	192.261	0.903	0.966	Valid
S3	61.35	188.787	0.871	0.965	Valid
M1	61.35	180.766	0.860	0.962	Valid
M2	61.45	178.871	0.840	0.962	Valid
M3	61.65	176.029	0.588	0.961	Valid
M4	61.60	174.682	0.885	0.961	Valid
P1	61.45	174.345	0.837	0.962	Valid
P2	61.40	183.726	0.619	0.966	Valid
P3	61.55	178.471	0.826	0.962	Valid
T1	61.70	177.726	0.912	0.961	Valid
T2	61.40	176.682	0.697	0.962	Valid

Source: Author's Process, 2024

By comparing the total correlation value obtained from SPSS processing results > from the r table (0.444), it can be concluded that all variables are valid so that all variables can continue to be included in the factor analysis of constraints in TKDN. To determine the most influential variable from the data above, we can look at the Corrected Item-Total Correlation value. This value shows how strongly each item (variable) correlates with the total scale, which indicates how much the item contributes to the overall internal consistency. The higher the value, the more influential the variable is: (a) From the data, here are the variables with the highest Corrected Item-Total Correlation values; (b) T1 with a value of 0.912 (Readiness of local Technology to compete with international qualifications); (c) S2 with a value of 0.903 (Registration of local products on the P3N website); (d) S3 with a value of 0.871 (The process of managing TKDN certificate products requires high costs and is quite long).

The conclusion obtained from the Validity and Reliability Test using SPPSS is that Variables T1, S2, and S3 have the greatest influence because they have the highest Corrected Item-Total Correlation value where the biggest influence is in part S2 which is a TKDN constraint on Local Product Certification and in technology.

Pearson Correlation Test

Pearson correlation test according to Sugiyono (2019) and Xia (2020) is a technique to understand the relationship between variables, determine the strength and direction of the relationship, and test the significance of the relationship with a certain level of confidence. Based on the validity and reliability tests, the certification factor is very influential, so a correlation test will be carried out on the TKDN value with certification and not with certification so that a relationship can be obtained between the dominant obstacle, namely certification and value without certification.

Sugiyono explained that the Pearson correlation test produces a correlation coefficient value denoted by rrr. This rrr value ranges from -1 to +1: (1) positive rrr: indicates a unidirectional relationship (if one variable increases, the other variable also increases); (2) rrr negative: indicates an opposite direction relationship (if one variable increases, the other variable decreases); (3) r=0r=0: indicates no linear relationship between the two variables. In a simpler form, the basis for decision-making is as follows: (A) If the significance <0.05, then the

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relationship is said to be correlated; (B) If the significance is> 0.05, then the relationship is said to be non-correlated Relationship Strength Criteria According to Sugiyono (2013) also provides guidelines for interpreting the strength of the correlation based on the rrr value as follows: (a) 0.00 - 0.199: very weak relationship; (b) 0.20 - 0.399: weak relationship; (c) 0.40 - 0.599: moderate relationship; (d) 0.60 - 0.799: strong relationship; (e) 0.80 - 1.000: very strong relationship.

Interpretation of pearson correlation test, according to Sugiyono (2019) and Danwang et al. (2020), after getting the rrr value from the test results, the next step is to look at its statistical significance (p-value). If $p < 0.05$ (with a confidence level of 95%), it can be concluded that there is a significant relationship between the two variables. After simulating using SPSS with the Pearson Correlation Test between certified and non-certified TKDN values, the following simulation results were obtained:

Correlations

		Sertifikat	NonSertifikat
Sertifikat	Pearson Correlation	1	.993**
	Sig. (2-tailed)		<,001
	N	8	8
NonSertifikat	Pearson Correlation	.993**	1
	Sig. (2-tailed)	<,001	
	N	8	8

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 3. Pearson Correlation Results

The results above show that the value of significance (2-tailed) is less than the value of 0.05, so it can be said that the significance relationship of the test carried out on the certified TKDN and non-certified TKDN values is correlated. As for the strength of the resulting correlation from the simulation carried out is a very strong relationship with an rr value of 0.993 where the scale of rr values for a very strong correlation relationship is between 0.80 - 1.000.

Conclusion

This study concludes that the implementation of the Domestic Component Level (TKDN) regulation in the Indoor Multifunction Stadium construction project in Jakarta succeeded in achieving a TKDN percentage of 55.80%, slightly below the regulatory target of 60%. The dominant factors affecting this achievement are constraints in local product certification and limited domestic production capacity. Thus, although the TKDN policy has been successful in encouraging the use of local components, improvements are needed in the aspects of certification and support for local producers to achieve optimal TKDN levels.

Suggestion

The results of this study provide recommendations for policymakers to strengthen certification procedures and support local industries so that TKDN regulations can be implemented more effectively in the future.

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