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Charting Maritime Convergence: India's Strategic Entry into ASEAN's Blue Economy through Vietnam

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Abstract: *Blue Economy has become a strategic priority for maritime nations like India and ASEAN members. Though every economy has adopted initiatives in this sphere, current literature lacks a comparative, model-based evaluation of sectoral synergies between these frameworks. The paper analyses the potential and strategic benefits of the collaboration of ASEAN and India in the context of Blue Economy, using the case study of Vietnam. A statistical model was created using Revealed Comparative Advantage (RCA), Location quotient (LQ) and Strategic scoring, taking into account both quantitative and qualitative data points. The focus has been on five priority areas namely- Fisheries and aquaculture, marine renewables, marine transport and logistics, offshore and gas, and coastal tourism. Quantitative figures are determined using trade data, policies, sector performance and contribution, showing India's export strength and Vietnam's importance. For evidence based economic diplomacy, this paper delves into methods to evaluate bilateral feasibility and sectoral balance. The basis of the targeted, sustainable partnerships that converge with India's Indo pacific vision and ASEANs developmental goals are arrived upon after understanding the data constraints and emerging subsector dynamics. By integrating both quantitative and qualitative data facets, this model demonstrates immense potential. Its applicability is not just limited to present study and is replicable across diverse regional segments and economic groups thereby contributing to strategic geopolitical depth and economic integration.*

Key Words: *Blue Economy; India- ASEAN collaboration; India-Vietnam Partnership; Indo-Pacific Strategy; Economic Diplomacy; Sustainable Development; Revealed Comparative Advantage; Location Quotient; Maritime Governance.*

1. INTRODUCTION

The Blue economy framework of India highlights a coordinated approach to utilize the immense potential of the vast marine and coastal resources focusing on sustainability and inclusivity. The sustainable use of oceanic resources for economic growth, improved livelihoods and ecosystem health, all form key components of the blue economy strategy. New and growing domains such as marine biotech, offshore renewable energy and deep-sea mining are being incorporated by India (EY, 2025). The fundamental principles include sustainability, inclusivity and innovation, thus balancing economic development, ecological integrity and social equitability. Sagar Mala Program, the Deep Ocean Mission and Pradhan Mantri Matsya Sampada Yojana (PMMSY) are some of the key projects of India in this aspect for the growth of this sector (EY, 2025). The blue economy framework is made around some strategic pillars of Economic Development, Ecological sustainability and Social equitability.

India and ASEAN have a multi faceted relation based on common principles and strategic priorities. The relationship between India and ASEAN based on shared common engagement in ecological sustainability, maritime governance and inclusivity (Santarita, 2024). This collaboration rests on three key pillars -

Security and governance

Both the frameworks of ASEAN and India share a goal towards security, stability and rule based oceanic governance. ASEAN and India both agree on enhancing the maritime domain awareness (MDA) while addressing illegal, unreported and unregulated (IUU) fishing. India's act east policy and Indo pacific oceans initiative or the IPOI act as diplomatic frameworks for engagement. While platforms such as ASEAN Regional Forum (ARF) and the Indian Ocean Rim Association (IORA) can provide avenues for practical cooperation.

Sustainability and Conservation

The ASEAN and Indian Blue economic frameworks focus on cooperation towards fisheries management and marine biodiversity protection. ASEAN's 2023 framework designates fisheries as a priority sector and promotes marine protection and pollution control. India resonates this with initiates like PMMSY, deep ocean mission while focusing on sustainable fishing and coastal livelihoods. Newer applications like satellite fish forecasting, seaweed framing etc. ensure oceanic health and regional food security.

Inclusivity and capacity building

India and ASEAN emphasize inclusive blue growth and focusing on marginalized coastal communities as well women and youth. There is a planned inclusion to promote social equity and participatory governance in sectors like marine tourism etc. India echoes this by supporting small-scale fisheries and women led development. Through schemes like the Swadesh Darshan Scheme, there is a focus on community-based ecotourism.

The ever expanding maritime interface in the Indo-Pacific has led to increasing intersection between the economic, environmental and strategic interests. As ocean-based industries grow in importance, cooperative frameworks in the Blue Economy offer opportunities to strengthen regional resilience and promote sustainable development. In this context, the following discussion examines the strategic necessity of this partnership from the geopolitical and financial perspectives.

Geopolitical need

Both India and ASEAN share a vision for a blue economy on the values based on sustainability, inclusivity and innovation. But this collaboration cannot be fully grasped in isolation away from the dynamics of the Indo-Pacific. China is a growing power in the south China sea and has asserted claims through assertive fishing practices, militarization of islands and territorial claims. India thus emerges as a key partner, an alternative and an engagement towards capacity building and oceanic diplomacy. India cannot act away from the weight of geopolitical sensitivity in the region and must act with due diligence, to successfully implement its collaborative initiatives with the least diplomatic friction. The need of the hour for ASEAN is resilience, equitable and good marine infrastructure. All of which aligns with India's strengths under schemes like Deep Ocean Mission etc. This is therefore a geopolitical counterweight for ASEAN as well as India.

Financial Alliance

There is a need for financial alignment of the two and it is imperative to understand why a financial linkage is necessary. Blue economy measures are very financially extensive and exhaustive. For a nation to care for the environment and sustainability cannot come at the cost of caring for its own people. This has historically acted as a deterrence for increased environmental policies to be implemented with great success (Pei et al., 2023). The LQ-RCA model provides an interesting alternative to find the juncture where economic collaborations can happen between two nations in a successful manner that is economically and strategically viable.

2. Literature Review

The concept of Blue economy has gained prominence in global policy and academic discourse as maritime nations seek to balance economic development with ecological sustainability. The World Bank defines Blue Economy as the sustainable use of Ocean Resources for economic growth, improved livelihoods and ecosystem health. (World Bank, 2017)

Subsequently there has been increased emphasis on the strategic importance of maritime cooperation and regional governance frameworks in the Indo-Pacific, particularly between India and ASEAN. (Santarita, 2024). There have been

increased institutional efforts particularly the ASEAN Blue Economy Framework, have attempted to formalise regional approaches to sustainable maritime development.

However despite growing policy interests, much of existing literature remains conceptual with limited attempts to quantitatively evaluate sectoral complementarities, sectoral specialization and therefore strategic policy alignment remain relatively underdeveloped. This paper seeks to contribute to the literature by introducing an integrated analytical framework combining Revealed Comparative Advantage (RCA), Location Quotient(LQ) and Strategic Scoring, thereby providing a data informed approach to identifying potential areas of collaboration within the India - Vietnam Blue Economy partnership.

3. Research Methodology

This study adopts a mixed-method analytics; framework combining quantitative economic indicators and qualitative strategic assessment to evaluate potential sectoral collaboration between India and Vietnam within Blue Economy. Vietnam has been selected as the focal case study because it represents a mid-sized economy within ASEAN, offering a balanced analytical context. This intermediate economic position allows Vietnam to serve as a representative case for examining the Blue Economy collaboration.

Two established indicators of Revealed Comparative Advantage (RCA) to assess India's export competitiveness and Location Quotient (LQ) to measure Vietnam's sectoral specialization relative to ASEAN's economy has been used. These indicators are supplemented with a strategic framework that incorporates geopolitical relevance, policy alignment, environmental sustainability and diplomatic feasibility.

A key limitation arises from the absence of disaggregated nationally accounted data for several blue economy sectors. The blue sectors such as Marine Transport, fisheries, Marine renewable energy are typically reported within broader categories including transport and storage, agriculture, forestry and fisheries; energy production etc. To address this constraint, the study employs proxy-based estimates derived from official sectoral statistics and industry reports.

Proceeding with these limitations is intentional. The limited availability of sector specific data highlights the broader underrepresentation of Blue Economy indicators within global statistical systems and development metrics, underscoring the need for more systematic measurement of maritime economic activity.

Case study of India-Vietnam Collaboration

India has immense untapped potential, and Vietnam has a lot of untapped resources when it comes to blue economy. The specific sectors that we are considering under blue economy in this case study are Fisheries and Aquaculture, Marine Renewable Energy, Marine Biodiversity and Eco-services, Maritime Transport (Shipping and Logistics), Port Infrastructure, Oil and Gas Exploration.

We use the statistical tools of 'Location Quotient' for Vietnam and 'Revealed Comparative Advantage' for India, to form an economic model which would serve as an important instrument to point towards which sectors are a good entry point for the possible successful collaborations and initiatives. It will reveal in which areas are there synergy and a comfort point for both the economies by revealing the sectoral specialization of Vietnam and India's strength.

For the purpose of this paper. The LQ-RCA model will be computed as follows.

$$\text{Location Quotient for a sector} = \frac{\frac{Sector\ GDP\ share\ in\ Vietnam}{Total\ GDP\ of\ Vietnam}}{\frac{Sector\ GDP\ share\ in\ ASEAN}{Total\ GDP\ of\ ASEAN}}$$

$$\text{Revealed Comparative Index} = \frac{\frac{India's\ export\ of\ the\ sector}{India's\ total\ export}}{\frac{Worlds\ export\ of\ the\ sector}{Worlds\ total\ Export}}$$

If we assemble the data for our sectors in a tabular format, we can do an analysis of where Vietnam has an advantage and where India can subsequently unlock its potential. We are taking into account the data from the year 2022. Strategic values have been assigned in score fashion (from 1 to 5 where 5 is the highest) taking in consideration how India benefits from each of the collaborations given economic, environmental and diplomatic sustainability.

Sector	Vietnam's LQ	India's RCA	Strategic Score	Source
Fisheries and Aquaculture	GDP Share = 6.3%; ASEAN Share in GDP = 0.89%; **LQ = 5.06** [1]	Seafood Export = $7.76B [a]; India total exports = $447.46B [e]; World export of the sector = $178B [f]; Total exports = $25.8T [g]; **RCA = 2.5**	5	[a]MPEDA (2022); [e]Ministry of Commerce and Industry (2023); [g]World Integrated Trade Solution (2025); [f]Food and Agriculture Organization of the United Nations (2024)
Marine Renewables	GDP Share = 0.01%; ASEAN Share in GDP = 0.10%; **LQ = 0.1** [2]	India exports = $3.6B [h]; India total exports = $452.7B [h]; World export of the sector = $98.6B [i]; Total exports = $25.8T; **RCA = 2.04**	4	[h]DGFT (2025); [i]Volza (2025)
Marine Transport and Logistics	GDP Share = 4.9%; ASEAN Share in GDP = 5%; **LQ = 0.98** [3]	**RCA = 1.4** [b]	4	[b]UNCTAD (2022)
Offshore Oil and Gas	GDP Share = 8.8%; ASEAN Share in GDP = 6.5%; **LQ = 1.35** [4]	**RCA = 1.15** [c]	3	[c]UNCTAD (2022)
Coastal Tourism	GDP Share = 4.3%; ASEAN Share in GDP = 12%; **LQ = 0.36** [5]	**RCA = 1.0** [d]	2	[d]World Travel & Tourism Council (2023)

Table 1. Sectoral LQ-RCA-Strategic Scoring Matrix

Justification for figures used in calculation:

Revealed Comparative Advantage:

RCA values in this study are derived using sector specific export data identified through the relevant Harmonised system(HS) trade codes. For Fisheries and Aquaculture, export values were calculated using HS codes 304, 035, 036, 037 representing major categories of fish and seafood products. Marine Renewable Energy exports were approximated using HS codes 8412, 7308, 8504, 8503 which correspond to equipment associated with renewable energy generation and related infrastructure. For Marine Transport, export estimates were calculated using HS code 89 which includes ships, boats and floating structures used in maritime transport and logistics. The remaining RCA values used in the analysis were sourced directly from the respective datasets referenced in the table.

Location Quotient:

[1]Fisheries and Aquaculture

Agriculture, Forestry and Fisheries contributed 11-12% of Vietnam's GDP in 2022, fisheries and aquaculture account for roughly half of the sector's value at 6.3% (GSO,2023)(FAO,2024)

Data clearly states that the Agriculture, Forestry and Fisheries (AFF) sector had a contribution of 9.8% to ASEAN's GDP in 2022. AFF Value Added was $354.3 Billion. For the same year, Trade Value for AFF was $447.1 Billion of which Fisheries consisted of $40.6 Billion (ASEAN Food Security Information System [AFSIS], 2024). By deriving a sectoral multiplier, we arrive upon a Fisheries Value Traded at $32.2 Billion, and thus legitimate percentage of value added by Fisheries as a percentage of ASEAN's GDP as 5.06.

[2]Marine Renewables

Vietnam had no operational offshore wind projects in 2022. A few pilot projects have been sanctioned at this time. Although several pilot projects were announced they were under planning stages. (IEA,2023) It would be prudent to assume a near zero contribution of 0.01% to Vietnam's total GDP of $409 Billion.

Electricity and gas contribute approximately 2.3% of ASEAN GDP (Brief, 2024), while renewables represent roughly 15.6%. (ASEAN Centre for Energy, 2024). Given offshore and wind and other marine renewables were at an early stage in 2022, their estimated contribution is approximately 0.10% of GDP.

[3]Marine Transport and Logistics

Sectoral shares used in this study are inferred from transport sector GDP estimates. Vietnam's national accounts report maritime transport within the border transportation sector. Given the central role of maritime shipping and port logistics within Vietnam's freight system, transport sector estimates are used as a proxy for marine transport and logistics at 4.9% (GSO,2023). while ASEAN transport related services contribute to roughly 5% of regional GDP (ASEAN Stats, 2024). The figures were treated as approximate indicators.

[4]Offshore Oil and Gas

Historically, Vietnam's Oil and Gas sector contributed 10-13% of its GDP with revenues ranging 9-11% of its state budget (Guotai Junan Securities Vietnam Research, 2024). So in 2022, $36 billion revenue was generated from its Oil and Gas, within a GDP of $408 billion (MarketLine, 2023; Trading Economics, n.d.). Applying proportionate estimates, we can arrive upon a GDP share of 8.8% for Oil and Gas in 2022.

[5]Coastal Tourism – ASEAN GDP Share

Travel and tourism were contributing an approximation of 12.4% to the ASEAN GDP in 2014, further projected to reach 15% by 2025 (DBS Group Research, 2016). In 2020, this sector contributed 12.1% to the GDP (Canada-ASEAN Business Council, 2024). Thus, the estimate of 12% was arrived at.

Strategic Scoring

The scoring has been done from a strategic standpoint taking into consideration India's evolving priorities, policy foundation, economic engagement, scientific and technological development and strength and diplomatic risk appetite.

Fisheries and Aquaculture has been scored the highest due to India's demonstrated capability to develop aquaculture technology and have breakthrough scientific advancements. It thus has the basic foundational infrastructure in place, based on which it can extend a collaborative hand to Vietnam. There is also sustainability and welfare goals that align with Vietnam's policies. Vietnam and India can potentially stand to benefit with climate-oriented measures and inclusive development with minimal diplomatic friction under the aegis of environmental diplomacy.

Marine Renewables have been marked as 4 because of India's recent push given to solar and wind (e.g. International Solar Alliance) in the domestic ecosystem coupled with its categorical support and campaigning for green diplomacy under G20 and COP platforms. By a focused approach towards green and renewable energy India can reduce expensive imports and support domestic policies like the National Hydrogen Mission. Its plan for a 30GW offshore wind target by 2030 aligns itself with climate goals and ambitions. The synergy with Vietnamese policies of a 6GW offshore wind plan presents shared interests.

Marine Transport & Logistics has also been rated 4 out of 5 because of its strategic value. India has a coastline of more than 7500km with immense volume of trade and commerce. Projects like Sagarmala aim to cut costs and develop port infrastructure and aid development. As Vietnam has a lot of important ports, collaboration with India would enable both the parties to integrate regional supply chains, expand shipping routes and a potential to boost India-ASEAN connection. Thus, having an economic and strategic presence in the Indo-Pacific.

Offshore oil and gas get a 3 out of 5 score due to the nature of oil and gas itself and how long-term growth is limited in this field. India has production basins like Bombay High and Krishna Godavari basin, but its output has stagnated despite rising demands. There are numerous other challenges like high extraction cost and complex deep-sea geology as well as environmental risks and transitioning from carbon pressures. Collaboration with Vietnam remains possible whose reserves based in the south China sea remain unexplored and thus offers mutual gains when it comes to exploration and technology. But Chinese geopolitical pressure poses a significant problem to this joint development thus lowering the score overall.

Coastal Tourism scores a low 2 out of 5. This is mostly due to the gross underutilization and weak infrastructure. Beach tourism accounts for a minute share of India's total tourism revenue. Challenges remain in bulk like inadequate waste management, limited branding compared to its peers, as well as seasonal footfall. Schemes like Swadesh Darshan are active and try to involve coastal regions but progress remains slow. A potential collaboration with Vietnam, which is known for its coastal tourism, can offer partnerships in planning, marketing but gaps remain and limit impact as of now.

Policy Inference

Given the above table, it would be most plausible to make 'Fisheries and Aquaculture' an entry point for India for its Blue economy initiatives in Vietnam. While Marine renewables have a high potential for investment with underutilized potential resources.

We can see that Vietnam's fisheries and aquaculture is domestically highly specialized and the same excels in India's export competitiveness. Vietnam has a strong location quotient of 5.06 in fisheries that basically implies that it has a higher output in this sector as compared to other economies in ASEAN. It has more employment and infrastructure surrounding this sector than the rest. Revealed comparative Advantage scoring of 2.5 shows that India has been exporting fisheries in a fashion that exceeds the world average.

Compatibility: This LQ-RCA model compatibility creates a natural synergy for sustained growth in the sector of fisheries and aquaculture. Vietnam's rich aquatic resources and abundant capacities can complement India's market access, export networks and existing framework, along with immense processing power. In other words, India can successfully export what Vietnam can produce, in this sector. Strategically, if the countries align with each other, instead of competing, it will lead to mutual benefits.

Domestic Policies, International Implications

India has several domestic policies, which are highly potent under the blue economy framework. Vietnam also has a Seafood Development strategy to 2030, vision to 2045. The core objectives of this strategy being: increasing output and efficiency of capture along with export earnings by emphasizing on scientific and technological developments, high tech aquaculture, processing along with decreasing fishing effort; minimizing postharvest loss to below 10%; commitment to combatting illegal, unreported and unregulated fishing IUU (Ministry of Agriculture and Rural Development [MARD], 2021).

Indian Policy of Pradhan Mantri Matsya Sampada Yojana is a transformative scheme which seeks to establish a strong and sustainable fisheries management network, improve on fisher's welfare, by using scientific and technological infrastructure and management to strengthen the value chain. These initiatives are focused on increasing sustainability, livelihood opportunities and India's Blue economy endeavors, in concomitance with its vision of 'Viksit Bharat @2047' (Press Information Bureau, 2024).

It would be prudent to evaluate the purview of these policies with the intention of how an alliance can be developed between the economies in a way such that the objectives of both the economies can be fulfilled in a sustainable and mutually beneficial fashion.

Hatchery and Seed System Collaboration

Bio secure hatcheries and Specific Pathogen Free broodstock (SPF) are targets in India's PMMSY to enhance resilience and to be disease free in aquaculture (Ministry of Fisheries, Animal Husbandry and Dairying, 2020). Natural alignment happens with Vietnam's development strategy which also emphasizes the need for upgradation and improvement of hatcheries and seed quality (Ministry of Agriculture and Rural Development [MARD], 2021). Collaborative initiatives on the Mekong Delta with the eastern coast of India can improve the quality of breeds by increased resilience, boosting exports and reducing overexploitation.

Cold chain and Traceability Infrastructure

There is a huge boost to cold chain systems including but not limited to, solar powered ice plants, and preprocessing center, under the PMMSY, while simultaneously promoting blockchain traceability in shrimp exports. A lot of research and development has been made in this area so as to increase credibility, transparency and maintain international quality standards among the stock. These innovations remain crucial to Vietnam as it is struggling to remove the EU issued 'Yellow Card' for increased IUU practices (Center for Sustainable and Agile Oceans, 2023).

Institution and Community level Capacity Building

The fisher community's welfare is one of the top priority in India's initiatives through empowerment via training, digital literacy, finance options, and insurance coverage (Ministry of Fisheries, Animal Husbandry and Dairying, 2020). Holistic development, sustained environmental practices and socio economic wellbeing is the cornerstone on which these reforms are formed. Vietnam's legal recognition of co-management is a big step in the same direction. It could partner in the existing framework and knowledge exchange for the said sectors and provide a safety network for its community (Socialist Republic of Vietnam, 2021).

Bilateral Seafood Value Chain

A linkage between the processing hubs from India such as Gujarat or Andhra Pradesh, in the form of fishing corridors, with Vietnam's productive coastal provinces like Khánh Hòa, Bến Tre could optimize shared infrastructure and logistics. This should logically enhance value retention, reduce third party dependency and increase resilience against climate driven harvest stocks.

Assessment Synergies and Gaps of the LQ-RCA Model

Sectoral Synergies

Quantifiable Specialization and Trade Synergy: The model provides measurable insights into sectoral specialization and export competitiveness of Vietnam and India respectively. This kind of dual metric allows evidence-based targeting (e.g. India's high RCA and Vietnam's high LQ in fisheries).

Prioritization of Strategic Sectors: The triangulated insight generation helps identify sectors like marine renewables, and fisheries that are not just strategically complimentary but aligns with domestic policies and international priorities like India's International Solar Alliance and Sagarmala program.

Scalability and Replicability: Since the framework is modular, it makes it feasible for scalability, where new sectors can always be added, and replicability, where it can be applicable to other country pairs, or regional settings.

Capability Gaps

Limited Disaggregation: There is limited accessible data when it comes to disaggregation of marine products from general products as a way of contribution to GDP (eg. Offshore oil vs. general petroleum). This generally is withheld from mainstream data sources and is internally circulated with the statistical department of the government.

Data Timeliness: The model is heavily based on up-to-date official data. Many ASEAN data sets are lagging by 1-2 years, and marine specific data sets are launched in publications (such as World Bank) which are not released in a yearly fashion.

Subjectivity in Strategic Score Value: Different analysts might assign different scores based on their understanding of current policy priorities, perceived national interest and expert judgment. This subjectivity needs to be accounted for.

Collaborative Levers

Policy alignment: This model allows for mapping sectoral priorities against regional frameworks like ASEAN Blue economy Framework and India's Indo-Pacific Oceans Initiative.

Scope of Integration: This model has potential to be further integrated with other economic models such as Input-Output Model to increase its applications by rigorous econometric integration while maintaining sectoral ranking structure.

Diplomacy and Investment Promotion: The structured approach helps provide for a ready pitch document for targeting sectors of Vietnam. It is well aligned with commercial outreach and environmental goals.

Structural Risks

Oversimplification of risk: Overassertive or misalignment of investments could trigger tension and disrupt regional dynamics, owing to the sensitiveness of the sectors. Each step has to be measured and cautious.

Climate and Regulatory Uncertainty: Since Blue Economy is heavily climate dependent, there always lies an uncertainty which needs to be taken into account when it comes to policy making. Any change in international laws could affect the feasibility of investment adversely.

Volatility in Trade: The RCA scores would be sensitive to global trade trends such as commodity price fluctuations, subsidies, tariffs etc. This may lead to a shift in sectoral priorities in the short time frame, thus requiring frequent calibrations.

5. Conclusion

This paper has sought to chart a pathway for India's strategic engagement with ASEAN economies, with the case study of Vietnam using a data driven pathway in the blue economy domain using the RCA-LQ-Strategic Value framework. By combining the revealed comparative advantage of India with trade specialization of Vietnam and India's broader strategic interest, there lies to converge all three and get a tactical entry point for collaborations and investments. The data driven approach allowed for prioritization of five key blue economy sectors of: fisheries and aquaculture, marine renewables, marine transport and logistics, offshore oil and gas, and coastal tourism.

Findings indicate that Fisheries and Aquaculture hold the great promise for bilateral collaboration scoring high across all three dimensions. India's export strength and policy ambitions are well matched by Vietnam's sectoral specialization. Additional sectors such as marine transport and renewables also emerge as viable, particularly in the context of India's Sagarmala program and ASEAN's evolving maritime infrastructure agenda.

By treating Vietnam as a testbed for scalable engagement, this paper puts forward a replicable blueprint for India's bilateral blue economy diplomacy especially in the Indo-Pacific context. It enhances analytical precision and enables policymakers to prioritize partnerships grounded in data and strategic rationale. While the model is robust, it is not without limitations, future research and refinements can focus on building on it with the Input-output simulations, spillover estimates and sector specific cost benefit analysis for exhaustive coverage and increased precision of economic inferences.

Ultimately a successful, long term, holistic partnership between India and ASEAN would be founded on sustainable, evidence backed and geopolitically sensitive maritime initiatives.

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