

A LITERATURE REVIEW OF CRITICAL COMPONENTS AND INTERNATIONAL SUCCESS FACTORS OF GREEN PUBLIC PROCUREMENT: LESSONS FOR NEPAL FROM GLOBAL PRACTICES

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ABSTRACT

Green Public Procurement (GPP) is gaining recognition as a strategic policy instrument for aligning public spending with environmental and sustainability objectives. Although numerous nations have formalized GPP via legal, market, and capacity-building frameworks, Nepal remains in the initial phase of implementation. This research seeks to pinpoint the essential elements and global success factors of GPP, extracting insights that can guide policy and practice in Nepal. This study relies entirely on an extensive literature review, including both national and international policy papers, organizational protocols, case studies, and chosen peer-reviewed scholarly sources. The review combined insights from various countries with established GPP frameworks, highlighting common structural elements, facilitating factors, and contextual obstacles pertinent to Nepal. The literature review pinpointed six fundamental elements crucial for successful GPP: (1) strong policy and legal structures, (2) strategic planning and prioritization, (3) stakeholder involvement and cooperation, (4) execution and capacity enhancement, (5) monitoring, assessment, and openness, and (6) political commitment and leadership. International key success factors comprise life-cycle costing, policy harmonization among agencies, specific supplier incentives, and the incorporation of sustainability into procurement regulations. Lessons for Nepal highlight the importance of institutional dedication, market preparedness for sustainable goods, and well-defined performance metrics. Results emphasize that effective GPP execution necessitates a unified strategy integrating legislative changes, skill enhancement, and market support. By embracing proven global strategies and tailoring them to local institutional, economic, and market contexts, Nepal could hasten the incorporation of sustainability into public procurement. The research wraps up with suggestions for policymakers to create explicit mandates, strengthen stakeholder capabilities, and improve monitoring systems to ensure procurement aligns with national sustainable development goals.

Key Words: Green Public Procurement, Sustainability, Success Factors, International Practices, Nepal.

1. Introduction

Green Public Procurement (GPP) is increasingly recognized as a key instrument for advancing sustainable development, addressing climate change, and promoting eco-innovation. The (European Commission, 2016) defines GPP as “a process whereby public authorities seek to procure goods, services, and works with a reduced environmental impact throughout their life cycle compared to conventional options.” Public procurement represents a significant share of global GDP, with estimates suggesting it accounts for 12-15% in developed economies and often more than 20% in developing countries (OECD, 2024). Additionally, it is considered acceptable and one of the most effective instruments for encouraging social responsibility, lessening adverse environmental effects, and advancing economic development (Shakya, 2016). Green Public Procurement is based on the fundamental notion of including environmental criteria for acquiring public items and services (Evans, et al., 2010). The primary benefit of GPP lies in its capacity to expand the market for ecologically and environmentally friendly goods and services (Li & Geiser, 2005) and act as a "market Trigger" (Testa, et al., 2012). Due to its resemblance to command and control mechanisms, the efficacy and efficiency of GPP as a tool for environmental policy are being questioned (Lundberg, et al., 2015a).

In Nepal, Public Procurement officially started after the budget system was divided into two categories, general and developmental in fiscal year 1956/57. Then The Administrative Procedure (Regulation) Act, 2013 (1956) was published with provisions to make laws regarding finance, accounts, and audit. As a result, the Public Fund Spending (Procedure) Rules, 1959 was enacted. This is supposed to be the first law related to public procurement in Nepal. Later this act was replaced by the Financial Administration Rule, 1969, and then by Financial Administrative Rule, 1985. To address the multi-sectoral procurement system with the help of procurement guidelines from donor countries, Financial Procedures Act, 2055 (1999) and Financial Administration Regulation, 2056 (1999) were published and implemented. Later in 2063(2007), the Financial Procedure Act, 2055(1999) and Financial Administrative Regulation, 2056(1999) were replaced and promulgated by the Public Procurement Act, 2063(2007) and Public Procurement Regulation, 2064(2007), which are being implemented currently with timely revisions (PPMO, 2023).

According to (United Nations, 2015), all United Nations Member States have approved "The 2030 Agenda for Sustainable Development," which includes 17 Sustainable Development Goals (SDGs) that are an urgent call to action by all countries, developed and developing, in a global partnership. Out of those 17 Goals, Goal 12 is to ensure sustainable consumption and production patterns, and it comprises 11 targets. Target 7 is to encourage sustainable public procurement practices through national policies and priorities.

The challenges such as policy gaps, awareness and capacity deficit, budgetary constraints and market rediness hinders the incorporation of sustainability into public procurement in Nepal.

Globally, governments and organizations have been developing and implementing GPP frameworks to address sustainability challenges. For instance, the European Union (EU) has been at the forefront of promoting GPP through its "EU Green Deal," which mandates integrating environmental criteria into public procurement processes. According to a report by the (UNEP, 2021), approximately 55% of public procurement in EU member states now incorporates green criteria.

The table 1 below summarizes case studies of various countries and the lessons that Nepal can learn from them, based on the provided sources:

Table 1 Key Lessons for Nepal from International Practices

Country/ Region	Case Study Focus	Key Lessons for Nepal	Source(s)
Republic of Korea	GPP Implementation and Impact Measurement	Comprehensive Data Systems: Nepal can learn the importance of establishing robust public procurement data systems to monitor and evaluate GPP impacts. Impact Measurement: Nepal can adapt methodologies used for measuring the environmental and economic benefits of GPP. Trained Staff: Nepal should train procurement staff in green public procurement.	(UNEP, 2019)
Japan	Environmental Benefits of GPP	Specific Product Category Focus: Nepal can identify key product categories for GPP based on their potential environmental benefits. Quantifiable Targets: Nepal should set and monitor quantifiable environmental targets, such as energy and carbon emission savings.	(UNEP, 2019)
Netherlands	Sampling Tenders	Sampling Methodology: Nepal can learn how to sample tenders and extrapolate data to assess the overall impact of GPP.	(UNEP, 2019)
China, Japan, Korea, Thailand	Comparative Analysis of GPP and Ecolabelling Programs	Policy Frameworks: Nepal can gain insights into effective policy frameworks, ecolabelling programs, and priority green products. Ecolabelling: Nepal needs to make guidelines on ecolabelling in green public procurement.	(UNEP, 2017b)
EU Member States (Sweden, Netherlands, France, Germany, Estonia, Poland, Spain, Italy)	GPP in Construction and Road Transport	Harmonization of Policies: Nepal can learn the importance of harmonizing GPP policies across different government bodies to avoid incoherent prioritizations. Solutions and Best Practices: Nepal can also learn from solutions and best practices that can help harmonize and strengthen GPP policies.	(Stockholm Environment Institute, 2023)
Bhutan	Successful GPP Implementation in a Developing Country	Implementation Approaches: Nepal can follow Bhutan's approaches to GPP implementation. Key Considerations: Nepal needs to consider the checklist of key considerations. Valuable Lessons: Nepal can also learn from the comprehensive list of valuable lessons learned for implementing GPP.	(Shakya, 2019)

Country/ Region	Case Study Focus	Key Lessons for Nepal	Source(s)
Various (Chile, Colombia, Costa Rica, Georgia, Lebanon, Mauritius, Moldova, Senegal, Tunisia, Ukraine, Uruguay)	Application of UNEP's SPP Approach	Four-Step SPP Reform Program: Nepal can follow the four steps in the development of a national SPP reform program. Training: Training figures prominently in each of the steps.	(World Bank, 2021)
Latin America and the Caribbean (LAC)	Integrating Environmental and Social Criteria	Policy Design: Nepal can gain insights into designing procurement policies that integrate environmental and social criteria across the public procurement cycle.	(World Bank, 2021)

The 2021 UNEP report titled "Sustainable Public Procurement: How to Wake the Sleeping Giant!" presents sustainable public procurement (SPP) as a transformative mechanism capable of addressing global environmental, social, and economic challenges (UNEP, 2021). Public procurement accounts for an estimated 15-30% of GDP in many countries, representing a vast, underutilized opportunity to drive sustainability across industries (World Bank, 2021).

Therefore, this study aims to analyze the factors that make Green Public Procurement successful in creating sustainable development and opportunities for integrating Green Public Procurement strategies into the current public procurement policies.

2. Materials and Methods

This study is grounded entirely in a structured qualitative literature review, designed to synthesize existing knowledge on the critical components and international success factors of Green Public Procurement (GPP) and to draw transferable lessons for Nepal. Given that GPP adoption in Nepal remains in its early stages, the review aimed to consolidate experiences from mature and emerging systems globally, with particular attention to lessons applicable to developing countries.

The literature review incorporated diverse source types to capture both theoretical and practical perspectives on GPP. These included:

International policy frameworks and guidelines from the European Commission, Organisation for Economic Co-operation and Development (OECD), United Nations Environment Programme (UNEP), and the World Bank, which offer normative and operational guidance for sustainable procurement. National strategies, legislation, and case studies from countries such as Japan, South Korea, Bhutan, and EU member states, highlighting the institutional arrangements, implementation mechanisms, and market interventions used to embed GPP.

Academic literature from peer-reviewed journals providing conceptual models, empirical evaluations, and comparative analyses of procurement reform and sustainability integration. Reports from governmental and non-governmental organizations in Nepal and abroad, which, while not peer-reviewed, offer context-specific data on procurement practices, policy gaps, and market readiness for sustainable products and services.

Publications were included if they met the following criteria:

- Addressed GPP or sustainable procurement at the policy, strategic, or implementation level.

- Provided analysis, lessons, or frameworks that could be applied to developing country contexts, particularly in South or East Asia.
- Presented sufficient detail to allow extraction of findings relevant to the study's objectives.
- Documents focusing solely on procurement unrelated to sustainability, purely technical specifications without policy context, or procurement in private-sector contexts without public relevance were excluded.

Thematic analysis was employed to group extracted data into recurring themes and categories. This involved multiple readings of each source to identify patterns in approaches, success factors, and challenges. Similar themes across sources were consolidated into broader “critical components” and “success factors,” while unique or context-specific practices were retained to illustrate adaptation potential for Nepal. A comparative lens was applied to contrast practices in developed and developing countries, drawing out lessons most relevant to Nepal's institutional, economic, and market realities.

The findings are limited by the scope of available literature, which varies in depth and methodological rigor, especially in the context of developing countries. Many relevant documents are policy reports or case studies rather than peer-reviewed empirical studies, which may introduce bias in reported outcomes. Furthermore, the study does not incorporate new primary data from stakeholders in Nepal; instead, it synthesizes secondary sources to inform recommendations.

3. Results

The effective implementation of Green Public Procurement (GPP) hinges on a confluence of critical components and enabling success factors, as evidenced by international practices and extensive academic literature. This section synthesizes global experiences to identify these foundational elements, drawing specific lessons from countries and regions that have successfully integrated GPP into their public procurement systems. The analysis is structured to first identify the overarching critical components, followed by a detailed examination of the success factors that enable these components to function effectively.

3.1 Critical Components and Success Factors of GPP Implementation

Green Public Procurement (GPP) is a strategic approach that integrates environmental considerations across all phases of public purchasing decisions. Its success in promoting sustainable development and eco-innovation globally relies on several interconnected structural components. These components serve as the building blocks for a robust GPP system, ensuring that sustainability objectives are systematically embedded within procurement processes.

3.1.1 Policy and Legal Framework

A robust policy and legal framework is a critical component for the successful implementation of sustainable public procurement (SPP) (Brammer & Walker, 2011). This framework is essential for guiding government bodies and other organizations in adopting sustainable purchasing practices, and it plays a key role in determining the extent to which organizations engage in GPP (Brammer & Walker, 2011; Chersan, et al., 2020).

3.1.2 Strategic Planning and Prioritization

Strategic planning and prioritization are essential for the successful implementation of sustainable public procurement (SPP). These processes help organizations focus their efforts and resources on the most impactful areas and ensure that SPP initiatives align with broader sustainability goals (ISO, 2017).

3.1.3 Stakeholder Engagement and Collaboration

Stakeholder engagement and collaboration are crucial for the successful implementation of sustainable public procurement (SPP) (UNEP, 2021). These processes involve actively including all relevant parties in the planning, implementation, and monitoring of GPP initiatives, ensuring that diverse perspectives are considered and that efforts are coordinated. (OECD, 2023)

3.1.4 Implementation and Capacity Building

Effective implementation involves putting SPP policies and plans into action, while capacity building ensures that all stakeholders have the necessary skills and knowledge to participate effectively in the process. (World Bank, 2021). Capacity building involves developing the skills and knowledge of all stakeholders. (UNEP, 2021)

3.1.5 Monitoring, Evaluation, and Transparency

Monitoring, evaluation, and transparency are essential components of effective sustainable public procurement (SPP) and governance. They ensure accountability, track progress, and facilitate continuous improvement. (European Commission, 2016).

Monitoring involves the systematic tracking of GPP implementation and its impacts. This includes collecting data on various aspects of the procurement process and the outcomes achieved (UNEP, 2021).

Evaluation involves assessing the effectiveness and impact of GPP initiatives. It helps to determine whether GPP policies are achieving their intended outcomes and where improvements can be made (UNEP, 2021).

Transparency ensures that information about GPP policies, procedures, and results is open and accessible to all stakeholders. This builds trust and accountability and promotes wider participation in sustainable practices (UNEP, 2021).

3.1.6 Political Will and Leadership

This is a crucial success factors for Green Public Procurement (GPP) (Shakya, 2019). Influential senior-level politicians and decision-makers can promote GPP (UNEP, 2021). Their support ensures resources for GPP implementation, mainstreaming GPP in public procurement, and the broad sharing of best practices (UNEP, 2021). Political will and leadership are expressed through establishing an GPP governance structure. Leadership support at the policy and implementation levels is essential for driving policy implementations (Shakya, 2019). A GPP Policy Statement indicates commitment from the highest level of government and links GPP efforts to national sustainable development goals (UNEP, 2021).

3.1.7 Life Cycle Costing

Life Cycle Costing (LCC) is a crucial success factor for Green Public Procurement (GPP) because it shifts the focus from the initial purchase price to the total cost incurred over the life cycle of a product or service, encompassing acquisition, operation, maintenance, and end-of-life expenses (OECD, 2023). This approach enables procurers to evaluate the environmental and economic impacts of their choices, promoting greater value for money and sustainability (World Bank, 2021).

The findings from the literature review reveal that successful Green Public Procurement (GPP) systems are built upon interconnected policy, institutional, market, and capacity-related components. While these components and success factors are consistently observed across high-performing systems internationally, their applicability to Nepal depends on the country's governance structure, economic priorities, and market conditions.

In countries such as Japan, South Korea, and members of the European Union, legal mandates for GPP are supported by detailed technical guidelines, life-cycle costing requirements, and monitoring systems that track environmental and economic impacts. Translating these elements to Nepal requires careful consideration of institutional readiness.

Table 2 Life Cycle Cost Critical Components

S . N	Critical Component	Key Aspects	It's Importance	Source
1.	Policy and Legal Framework	<ul style="list-style-type: none"> • Clear national Policies and Strategies • Legal Mandates • Regulatory Frameworks • Alignment with International Standards • Integration of Sustainability into Procurement Law • Clear Objective • Incentive • Guidance and Standards • Addressing Gaps and Barriers • Enforcement 	<ul style="list-style-type: none"> • Sets the "rule of the game" • Provides clarity • Ensures Compliance • Drives Market Transformation • Supports Policy Objective • Promotes Accountability 	(Brammer & Walker, 2011), (UNEP, 2019), (World Bank, 2021), (UNEP, 2023), (UNEP, 2017b), (European Commission, 2016) (Shakya, 2019)
2.	Strategic Planning and Prioritization	<ul style="list-style-type: none"> • Identifying National Priorities • Setting Clear Objectives and Targets • Establishing a Policy and Action Plan • Prioritizing Product and Service Categories • Applying Risk Management • Utilizing Prioritization Tools • Market Analysis 	<ul style="list-style-type: none"> • Focuses on Resources • Supports Policy Objective • Maximizes Impact • Guides Implementation • Promotes Efficiency • Ensures Continuous Improvement • Enhances Accountability • Supports Market Transformation 	(ISO, 2017) (UNEP, 2012) (UNEP, 2021) (Sönnichsen & Clement, 2019), (UNEP, 2023), (European Commission, 2016), (Banihashemi, et al., 2017)

S . N	Critical Component	Key Aspects	It's Importance	Source
3.	Stakeholder Engagement and Collaboration	<ul style="list-style-type: none"> Identifying Key Stakeholders Establishing stakeholder forums Consultation and Dialogue Transparency and Information Sharing Capacity Building and Training Partnership and Collaboration Feedback 	<ul style="list-style-type: none"> Increased Buy-in and Support Reduced Resistance Better Outcomes Increased Accountability Long-Term Success 	(UNEP, 2021) (World Bank, 2021) (OECD, 2023) (OPM, 2022) (Shakya, 2019) (UNCED, 1992) (Switchasia, 2024)
4.	Implementation and Capacity Building	<ul style="list-style-type: none"> Integration into Procurement Process Action Plans and Roadmaps Utilizing Tools and Guidelines Pilot Tenders Communication Targeted Training Programs Awareness Competency Framework Knowledge Retention 	<ul style="list-style-type: none"> Effective Policy Implementation Skilled Workforce Improved Outcomes Long-Term Success Enhanced Collaboration Continuous Improvement 	(World Bank, 2021) (UNEP, 2023) (Switchasia, 2024) (UNEP, 2021) (Morales, et al., 2023)
5.	Monitoring, Evaluation and Transparency	<ul style="list-style-type: none"> Track Implementation Data Collection Identify Areas for Improvement Assessing Impact Using Feedback Third-Party Evaluation Regular Reviews Public Disclosure Open access to Data Communication channels 	<ul style="list-style-type: none"> Accountability Informed Decision Making Continuous Improvement Enhanced Trust Market Transformation Policy Effectiveness 	(IISD, 2024) (UNEP, 2021) (Komakech, 2016) (OECD, 2023) (Hasanbeigi, et al., 2019) (World Bank, 2021) (ISO, 2017)
6.	Political Will and Leadership	<ul style="list-style-type: none"> High level commitment Policy Integration Budget Allocation Institutional Support Long-Term Vision 	<ul style="list-style-type: none"> Policy Enforcement Resource Mobilization Strategic Direction Stakeholder motivation National Prioritization 	(Shakya, 2019) (UNEP, 2021) (Switchasia, 2024) (IISD, 2024)
7.	Life Cycle Costing	<ul style="list-style-type: none"> Total Cost Analysis Decision Justification Procurement Comparability Risk Assessment Environmental Impact 	<ul style="list-style-type: none"> Cost Transparency Value Optimization Green Justification Sustainable Decision making Environmental Accounting 	(OECD, 2023) (UNEP, 2019) (UNEP, 2017b) (UNEP, 2021) (IISD, 2017) (Shakya, 2019)

Although the Public Procurement Act (2007) and Public Procurement Regulations (2007) provide a legal foundation for transparent procurement, they currently lack explicit provisions for sustainability. Integrating green criteria will therefore require legal reform and the issuance of standardized technical specifications aligned with environmental objectives.

The review also underscores the importance of capacity building for procurement officials and suppliers. In Nepal, limited awareness of GPP principles among public officials, coupled with insufficient training programs, presents a major barrier to implementation. Experiences from Mauritius and Tunisia demonstrate that targeted training programs can rapidly increase the uptake of sustainable procurement practices. For Nepal, a phased capacity-building strategy—starting with central-level agencies such as the Public Procurement Monitoring Office (PPMO) and extending to provincial and municipal levels—would help create a critical mass of practitioners capable of applying GPP criteria effectively.

Market readiness emerged as another determinant of GPP success. In economies where suppliers are incentivized to produce eco-friendly goods, GPP can stimulate innovation and expand the availability of sustainable products. In Nepal, however, the domestic market for certified green goods is still underdeveloped. This limits the feasibility of applying strict environmental criteria in the short term. Drawing from the example of Bhutan, which gradually introduced GPP while supporting local producers to meet green standards, Nepal could adopt a similar incremental approach—initially prioritizing sectors where sustainable alternatives already exist, such as renewable energy equipment or eco-friendly construction materials.

The analysis also highlights the need for robust monitoring and evaluation mechanisms. Without systematic tracking, GPP policies risk becoming symbolic rather than transformative. In Nepal, the existing e-procurement system could be enhanced to include environmental performance indicators, allowing policymakers to measure progress toward national sustainability goals. Experiences from South Korea's Green Product Information System (GPIS) and Japan's annual GPP performance reporting demonstrate how such systems can enhance transparency, accountability, and stakeholder confidence.

Political will and leadership remain cross-cutting enablers. In countries with strong GPP performance, senior policymakers have championed sustainable procurement as part of broader national development strategies. In Nepal, embedding GPP into the 15th and subsequent periodic plans, climate change policies, and sectoral strategies would provide the necessary political visibility and continuity to sustain reforms.

Overall, the discussion indicates that while Nepal faces structural, market, and capacity-related challenges, many of the identified international success factors are adaptable to its context. By prioritizing legal reform, targeted capacity building, incremental market engagement, and performance monitoring, Nepal can lay the groundwork for a GPP system that not only aligns with global sustainability commitments but also supports local economic development and environmental protection.

4. Conclusions

This study reviewed international experiences with Green Public Procurement (GPP) to identify critical components and success factors that can inform policy development in Nepal. The literature consistently shows that effective GPP systems are built on robust legal and policy frameworks, strategic planning, stakeholder engagement, targeted capacity building, market readiness for sustainable products, and robust monitoring and evaluation mechanisms. Success factors such as political leadership, life-cycle costing, harmonized policies, and supplier incentives further enhance implementation outcomes.

For Nepal, the findings suggest that while the institutional and market environment currently presents significant challenges, many elements of successful GPP systems elsewhere can be adapted. Legal reforms to integrate sustainability criteria, phased capacity-building programs for procurement officials, incremental sectoral targeting, and the development of market incentives are particularly relevant. The adaptation process should be guided by Nepal's governance structures, economic priorities, and resource constraints, ensuring that the approach is both practical and sustainable.

4.1 Lessons for Nepal

Based on the research findings and conclusions, the following recommendations are proposed for policymakers, practitioners, and future researchers to facilitate the effective implementation of Green Public Procurement (GPP) in Nepal:

Based on the research findings, the following recommendations are proposed to facilitate the **effective implementation of Green Public Procurement (GPP) in Nepal**:

4.1.1 Strengthening Policy and Legal Framework

- Enact a dedicated GPP law that mandates the integration of sustainability criteria in public procurement.
- Align GPP policies with Nepal's Sustainable Development Goals (SDGs), particularly SDG 12 on responsible consumption and production.
- Establish clear guidelines and standards for green products and services, ensuring accessibility for procurement officers and suppliers.
- Revise existing procurement laws and regulations to remove barriers to GPP adoption and strengthen enforcement mechanisms.

4.1.2 Capacity Building and Awareness

- Implement mandatory training programs for procurement officials, policymakers, and suppliers on sustainable procurement practices and life-cycle costing.
- Launch national awareness campaigns to educate stakeholders on the benefits and long-term cost savings of GPP.
- Establish a dedicated GPP Task Force with experts from relevant ministries, agencies, and academia to provide technical support and oversee implementation.

4.1.3 Market Development and Incentives

- Introduce financial incentives such as tax exemptions, subsidies, and grants to encourage suppliers to adopt sustainable practices.
- Support local businesses and SMEs in producing eco-friendly products through financial aid and technical support.
- Develop an online database of certified green products and suppliers to facilitate informed procurement decisions.

4.1.4 Implementation and Monitoring

- Initiate pilot projects in selected sectors to demonstrate the feasibility and benefits of GPP, providing evidence for broader implementation.
- Establish a monitoring and evaluation system with key performance indicators (KPIs), regular reporting, and independent audits to track GPP progress.
- Promote performance-based contracts that focus on sustainability outcomes rather than just initial costs.
- Apply life-cycle costing (LCC) methodologies in procurement decisions to assess the long-term economic and environmental impact.

Limitations

The conclusions are based solely on secondary sources, including policy documents, case studies, and peer-reviewed literature. The absence of new primary data from Nepalese stakeholders means that some contextual nuances may not be fully captured. Additionally, much of the available literature from developing countries consists of descriptive reports rather than rigorous empirical evaluations, which may affect the generalizability of certain findings.

Future Research Directions

Further research should focus on empirical studies within Nepal to assess the feasibility, cost-effectiveness, and market impacts of proposed GPP measures. Pilot programs in selected sectors—such as construction, energy, and waste management—could provide valuable data on implementation challenges and opportunities. Longitudinal monitoring of such initiatives would help refine the national GPP framework over time, ensuring that it remains responsive to evolving market conditions and sustainability priorities.

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