SUSTAINABLE PUBLIC PROCUREMENT IN INDIA'S ENERGY SECTOR

COMPREHENSIVE ANALYSIS OF CURRENT POLICIES

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CAG
Citizen consumer and civic Action Group

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EXECUTIVE SUMMARY

Sustainable Public Procurement (SPP) in India is an emerging policy framework aimed at aligning government purchasing decisions with sustainability goals. Although India has made strides in environmental and social sustainability through various national policies, the integration of these principles into public procurement remains fragmented. In the energy sector, a comprehensive and unified approach to incorporating sustainability into procurement practices has yet to be fully developed.

This report evaluates the current state of SPP policies within India's energy sector, with a focus on public sector undertakings (PSUs) in power generation. It provides an in-depth analysis of existing frameworks and policies, identifying both their strengths and major limitations in fostering sustainability.

The analysis revealed significant gaps in India's SPP approach. These include the lack of a comprehensive, sector-specific framework for energy procurement, limited application of life-cycle cost analysis in decision-making and insufficient integration of renewable energy targets within procurement strategies. These gaps are compared against global best practices, drawing insights from case studies of Canada’s Federal Sustainable Development Strategy, The Netherlands’ National Action Plan for Sustainable Public Procurement, Japan’s Green Purchasing Act, The United States Environmental Protection Agency (EPA) and Norway’s Public Procurement Policies to mention a few.

Informed by these comparative analyses, key recommendations include:

Develop a comprehensive national framework for SPP in the energy sector, integrating environmental, social, and economic sustainability criteria.

Strengthen enforcement and monitoring mechanisms to ensure compliance with sustainability mandates in public procurement processes.

Promote life cycle costing and total cost of ownership approaches to evaluate bids, prioritising energy-efficient and low-carbon solutions.

Enhance capacity-building programs for procurement officials to improve understanding and implementation of SPP principles.

Encourage innovation and green technology adoption by providing incentives for suppliers offering sustainable energy solutions.

Improve accessibility for Micro, Small, and Medium Enterprises (MSMEs) in green procurement by reducing entry barriers and offering financial support.

Promote transparency and accountability through digital procurement platforms that incorporate sustainability metrics and reporting.

Align procurement policies with international best practices and commitments, ensuring coherence with India’s climate and sustainability goals.

These recommendations aim to bridge the identified gaps, align India's policies with global standards and promote a more sustainable and efficient energy sector. This report serves as a resource for policymakers, PSUs and other stakeholders, contributing to the ongoing discourse on sustainable development within India’s energy landscape.

OVERVIEW OF SUSTAINABLE PUBLIC PROCUREMENT

1.1 Introduction:

Sustainable Public Procurement (SPP) is an approach whereby public organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole-life basis while generating benefits not only to the organisation but also to society and the economy and significantly reducing negative impacts on the environment. In the context of the energy sector, SPP involves considering factors such as energy efficiency, renewable energy sources, lifecycle costs and environmental impacts when making procurement decisions for power generation, transmission and distribution infrastructure.

Since 2005, the United Nations Environment Programme (UNEP)[1] has actively promoted SPP at national, regional and global levels. UNEP's efforts have been focused on developing methodologies to help governments implement SPP policies. In recent years, UNEP has continued its leadership in SPP initiatives, co-leading the One Planet SPP programme and updating SPP guidelines to include the latest trends and concepts, as well as fostering regional cooperation and capacity building in countries like India, Moldova and Kyrgyzstan.

In India, various government bodies[2], including Ministries, Departments and public sector enterprises, allocate significant budgets for the procurement of goods and services to meet policy objectives. While common-use items must be procured through the Government e-Marketplace (GeM) as per the General Financial Rules (GFR), 2017, Ministries also have delegated powers to manage other procurements in line with financial rules. Public procurement in India operates under a legal framework supported by constitutional provisions, the Indian Contract Act (1872) and other relevant legislation. Although there is no dedicated law for public procurement, guidelines such as the Public Procurement (Preference to Make in India) Order, 2017 and other preferences for

Micro and Small Enterprises, provide structure for the process, ensuring alignment with national policy objectives.

This report elaborates in detail on the scope of SPP in India's energy sector by focusing on key parameters that significantly impact sustainability, namely: energy generation, efficiency and conservation.

1.2 Why is SPP Important for India's Energy Sector?

India's energy sector is a major contributor to greenhouse gas emissions, making SPP a crucial tool for reducing its carbon footprint and mitigating the impacts of climate change. Implementing SPP can promote the adoption of cleaner energy technologies, drive innovation and create green jobs, all while reducing long-term costs associated with energy production and consumption. Furthermore, SPP can enhance India’s energy security by promoting diverse and sustainable energy sources, reducing the country’s dependence on fossil fuel imports[3].This aligns with India’s international commitments, such as those under the Paris Agreement and supports its national sustainable development goals.

The benefits of SPP extend beyond environmental impact. By incorporating sustainability into procurement, India can also reduce air and water pollution, improving public health outcomes. Government procurement represents a significant portion of the economy and adopting SPP can help shape market trends towards more sustainable products and services. SPP encourages the efficient use of resources, which is critical for meeting the rising energy demand and overcoming resource constraints. Moreover, by prioritising sustainable solutions, India can accelerate technological advancements in clean energy, positioning itself as a global leader in sustainable energy practices.

In the context of India's rapidly growing energy needs and its ambitious climate goals, SPP presents a powerful tool to drive sustainable development in the energy sector. This report examines the current state of SPP policies in India's energy sector, identifies gaps, compares them with global best practices and provides recommendations for improvement. By enhancing its approach to SPP, India can not only address its energy challenges but also position itself as a leader in sustainable energy practices on the global stage.

1.3 The Five R’s of Procurement in SPP

The fundamental goal of procurement, whether in the public or private sector, is to strike an optimal balance between costs and requirements, guided by the Five 'R's of Procurement. The entire procurement process, from identifying a need to fulfilling it, is designed to achieve this balance[4]. The term "right" refers to the optimal equilibrium of the following parameters:

Q RIGHT QUALITY

The goal is to procure the exact quality required—neither more nor less—by clearly defining specifications that meet the entity's needs. Achieving the right quality involves understanding the functional value, cost and the bidder's quality management systems. In public procurement, it's crucial to balance quality with value for money.

Q RIGHT QUANTITY

Procuring too little or too much can incur additional costs and inefficiencies. The objective is to procure the right quantity that strikes a balance between frequent smaller purchases and larger, prolonged-use quantities to avoid unnecessary overheads.

P RIGHT PRICE

The aim isn't solely to choose the lowest-cost option but rather to determine a price that aligns with factors such as quality, quantity, environmental impact, product durability and regulatory compliance. Price considerations should include not just the initial purchase cost but also maintenance, operational and disposal costs, a concept known as life-cycle costing.

T RIGHT TIME AND PLACE

Procuring materials or services too early or too late can lead to inefficiencies and extra costs. Similarly, delivery to the wrong location adds logistical costs. The timing and location of the procurement should align with the organisation's specific needs to avoid delays or disputes.

S RIGHT SOURCE

The source of goods, services, or works should have the financial and technical capability to meet the needs, demonstrated through a strong track record of similar contracts. For smaller purchases, sourcing from large manufacturers may not be appropriate, just as intermediaries may not be suitable for large-scale requirements.

METHODS AND DATA ANALYSIS

This report adopts a qualitative method of research to assess SPP in India's energy sector. The methodology combines both primary data gathered through expert interviews and questionnaires and secondary data from reports, papers and relevant literature.

2.1 Primary Data

Interviews were conducted with subject matter experts, including policymakers, industry professionals and researchers specialising in energy regulation, procurement policies and sustainability. These interviews provided qualitative insights into the current state of SPP practices, highlighting key challenges and opportunities for improvement in India’s energy sector.

Additionally, a structured questionnaire was developed to guide these interviews and gather expert insights systematically. The questionnaire covered key aspects of SPP in the energy sector, including the role of policies such as the General Financial Rules (GFR), the Government e-Marketplace (GeM), the Task Force on SPP (2018) and the National Action Plan on Climate Change (NAPCC). It also explored the impact of Green Public Procurement (GPP), the Public Procurement (Preference to Make in India) Order (2017) and the Public Procurement Policy for Micro and Small Enterprises (MSEs) Order (2012). Experts were asked to provide insights into policy gaps, challenges in implementation and recommendations to enhance SPP practices. The overall feedback gathered from experts was then analysed to pinpoint policy gaps, evaluate the effectiveness of procurement mechanisms and develop recommendations for strengthening SPP implementation.

2.2 Secondary Data

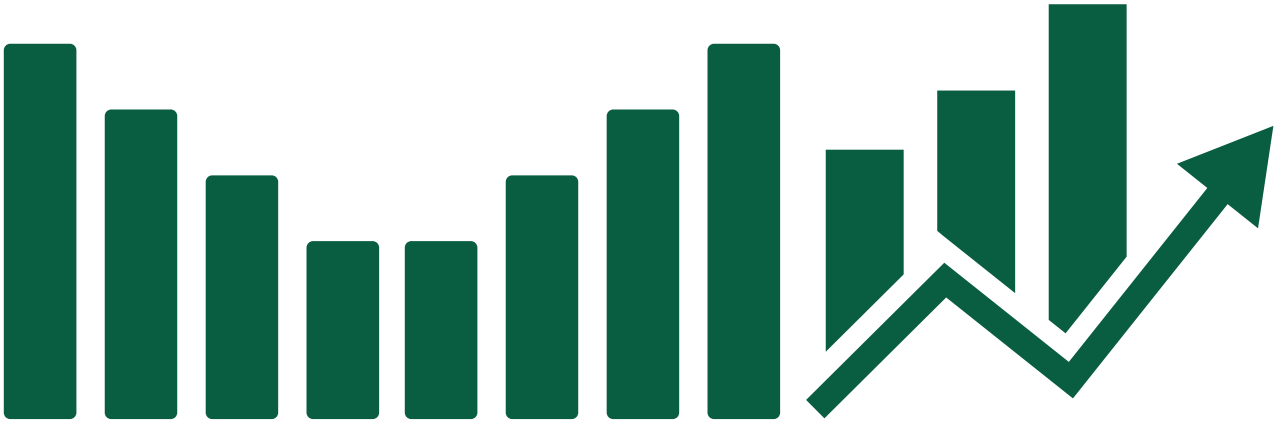
Secondary data was collected from various sources, including government reports, academic papers, case studies and policy documents. These sources provided a comprehensive understanding of the legal and regulatory framework governing public

procurement in India, with a specific focus on the energy sector. Key documents, such as the General Financial Rules (GFR), the Public Procurement (Preference to Make in India) Order (2017) and reports from the United Nations Environment Programme (UNEP), were reviewed to analyse existing policy structures, trends in SPP and best practices from other countries.

2.3 Data Analysis

The analysis began with a full lifecycle review of SPP processes across stages including need assessment, resource extraction, energy generation, energy consumption and end-of-life decommissioning. After conducting an overall life cycle analysis, the study was narrowed down to focus specifically on energy generation, as it emerged as the stage with the maximum environmental impact and the greatest scope for in-depth policy analysis. Given its critical role in shaping sustainable procurement outcomes, examining policies related to energy generation provided valuable insights into strengthening SPP frameworks in India's energy sector.

This focus on energy generation enabled the identification of key areas where SPP can be most effectively implemented to maximise sustainability outcomes. A comparative analysis with global SPP frameworks and case studies from other countries further provided insights into best practices and potential improvements for India. By centering the study on this critical stage, the report aims to assess policy gaps, evaluate existing procurement frameworks and propose targeted recommendations to enhance sustainable procurement in India’s energy sector. Through a combination of primary and secondary data analysis, the report presents a comprehensive evaluation of the current SPP landscape and outlines actionable strategies for strengthening sustainability integration in public procurement.



CURRENT SPP POLICY FRAMEWORKS IN INDIA

3.1 General Financial Rules (GFR)

Public procurement is a vital component of India's economy, representing approximately 30% of the country's GDP. Given this significant share, public procurement has the potential to drive large-scale sustainable practices across various sectors. To regulate public spending, India follows the General Financial Rules (GFR)[5], which are issued by the Ministry of Finance and serve as a foundational framework for public procurement processes. The GFR lays down general principles for efficient, transparent and fair procurement of goods, services and works by government agencies.

GFR 2017—the latest revision of the rules—aims to streamline the procurement process while ensuring value for money, competition and accountability. The rules are designed to ensure that public funds are spent in a way that provides the best return on investment for the government. Though the GFR does not mandate sustainability as a core principle, it provides ample room for government departments to incorporate SPP practices through certain provisions, for instance, procurement of common-use items is mandated through the Government e-Marketplace (GeM) under Rule 149 of the GFR

- **E-Procurement and Digital Initiatives**

GeM[6] serves as a transformative digital platform for public procurement in India, designed to streamline and enhance the purchasing process for government entities. It features dedicated options that allow users to filter and select green and energy-efficient products, thereby promoting sustainable procurement practices. By integrating sustainability criteria into the procurement process, GeM facilitates easier access to environmentally friendly options, enabling government buyers to make informed decisions that align with sustainability goals. Additionally, various public sector undertakings (PSUs) have implemented e-procurement systems that incorporate sustainability criteria in their tendering processes, further encouraging the procurement of eco-friendly products and technologies. These digital initiatives not only increase transparency and

efficiency in public procurement but also contribute significantly to India's efforts in fostering sustainable practices across government operations. Although sustainability is not a core requirement, some government agencies have voluntarily embraced green procurement practices, like the Indian Railways Vision 2020, which focuses on energy efficiency. Section 173 of GFR supports the procurement of innovative technologies, which can include sustainable solutions. Thus, while the current GFR creates a foundation for public procurement, there is still room for developing stronger and more consistent measures to promote sustainability. This could be done by making sustainability a core requirement and standardising the criteria, improving monitoring by setting clear benchmarks and focusing on capacity building and training.

3.2 Task Force on Sustainable Public Procurement (SPP) 2018

In 2018, the Indian government established a Task Force on Sustainable Procurement[7] to develop a more structured and strategic approach to SPP. Recognising the growing importance of sustainability in public sector operations, the task force was created to align India's procurement policies with global sustainability goals. The primary aim was to explore how public procurement could be used as a tool to promote sustainable development, including environmental protection, social equity and economic efficiency. The Sustainable Procurement Task Force members include joint secretaries, directors-general, and other representatives from the following entities: Confederation of Indian Industry (CII), Department of Expenditure, Ministry of Finance, Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Railways (MoR), Bureau of Indian Standards, Bureau of Energy Efficiency, Dedicated Freight Corridor Corporation of India and the Public Procurement Division (MoF 2018). The task force was mandated to address four key objectives:

- **Review International Best Practices:** The task force was tasked with conducting an extensive review of successful SPP initiatives and frameworks from other countries, with the aim of identifying strategies that could be adapted to the Indian context.
- **Inventory of SPP Practices in India:** A detailed assessment of the current status of SPP across various government organisations in India was to be conducted. This would serve to highlight existing sustainable procurement efforts, gaps and areas for improvement.
- **Drafting a National Sustainable Procurement Action Plan:** One of the core objectives was to formulate a comprehensive Sustainable Procurement Action Plan for India. This plan would outline strategies, objectives and implementation timelines to institutionalise SPP practices across all levels of government.

- **Identify Key Product and Service Categories for Immediate SPP Implementation:** The task force was also expected to recommend specific product and service categories where SPP could be implemented immediately. This step was designed to offer actionable guidelines and set a precedent for further SPP expansion in other areas.

By focusing on these objectives, the Task Force on SPP aimed to develop a systematic, data-driven and practical approach to incorporating sustainability in government procurement processes. It laid the groundwork for establishing SPP as a national priority, creating pathways for environmental, social and economic improvements through the power of public purchasing. However, the government is yet to update on progress and report key findings of the last force.

3.3 National Action Plan on Climate Change (NAPCC)

Launched in 2008, the National Action Plan on Climate Change (NAPCC)[8] is India's strategic response to the growing challenges posed by climate change. The NAPCC promotes energy-efficient products and renewable energy systems through missions like National Mission for Enhanced Energy Efficiency (NMEEE) and the National Solar Mission, encouraging climate-aligned procurement practices. It outlines eight core "National Missions" that focus on promoting sustainable development, enhancing energy efficiency and fostering the use of renewable energy. Each mission has specific goals that aim to mitigate climate change, reduce greenhouse gas emissions and enhance the country’s adaptation capabilities. Of these the key missions that work on principles of SPP are

THE NATIONAL SOLAR MISSION (NSM)

The National Solar Mission (NSM)[9], officially known as the Jawaharlal Nehru National Solar Mission (JNNSM), is a pivotal initiative launched by the Government of India on January 11, 2010. It aims to position India as a global leader in solar energy by fostering the development of solar energy.

The NSM encourages public sector agencies to procure solar power through competitive bidding processes[10]. This approach is designed to ensure transparency, cost-effectiveness and efficiency in the procurement of renewable energy projects. By fostering competition among developers, the mission aims to lower the overall costs associated with solar power generation while enhancing service delivery.

NATIONAL MISSION FOR ENHANCED ENERGY EFFICIENCY (NMEEE)

The NMEEE is one of the missions under the NAPCC designed to boost energy efficiency[11] across key sectors of the Indian economy implemented since 2011. The mission emphasises the role of energy-efficient technologies, both in industrial processes and public procurement. Through government-backed initiatives, the mission promotes the adoption of energy-saving technologies that not only reduce costs but also contribute to the country's emissions reduction targets.

One of the key features of the NMEEE includes the Perform, Achieve, Trade (PAT) Scheme. It stands out as an innovative approach to energy conservation and is closely linked to the goals of SPP.

PERFORM, ACHIEVE, TRADE (PAT) SCHEME

The PAT Scheme,[12] introduced in 2012, is a market-based mechanism designed to improve energy efficiency in energy-intensive industries. It works by setting energy consumption targets for large industries, referred to as designated consumers. These targets are based on specific energy consumption norms for various sectors, including cement, steel, aluminium and power generation. For example, under the PAT mechanism, government agencies are encouraged to procure energy-efficient equipment and technologies to meet their own sustainability goals. By the end of the second cycle of the PAT Scheme (2016-2019), the program had led to significant energy savings, translating to a reduction of around 31 million tons of CO_2 emissions annually. This procurement supports India’s broader climate commitments under the NAPCC by promoting the use of low-energy products and renewable energy technologies in government projects.

3.4 Green Public Procurement (GPP)

GPP in India is an integral part of SPP,[13] focusing specifically on incorporating environmental sustainability into government purchasing decisions. While India has made strides through initiatives like the NAPCC and energy efficiency programs, GPP is still in its nascent stages. Some public sector undertakings and government agencies are beginning to adopt environmental criteria in their procurement, especially in sectors like energy and construction.

By incorporating environmental considerations into the procurement process, GPP can contribute to several benefits, including:

Reduced Environmental Impact: GPP helps reduce the environmental footprint of government projects by promoting eco-friendly products and practices. For example, the Indian Railways has taken steps to reduce its carbon footprint by procuring energy-efficient LED lights, solar panels and green technologies for trains and stations.

Improved Energy Efficiency: The Bureau of Energy Efficiency's (BEE) star-rating system is a key enabler of energy-efficient procurement in India. Government buildings and offices often choose 5-star rated air conditioners, refrigerators and other appliances to reduce energy consumption. The Delhi Metro, for instance, has incorporated energy-efficient technologies, such as regenerative braking systems, which save electricity by feeding power back to the grid during braking. This focus on energy efficiency in public procurement not only reduces energy costs but also aligns with India's energy conservation goals under the Energy Conservation Act.

Stimulation of Green Markets: GPP is creating demand for environmentally friendly products, stimulating the green economy. The government’s push for solar energy under schemes like KUSUM (Kisan Urja Suraksha Evam Utthaan Mahabhiyan) has led to increased procurement of solar pumps and panels for agricultural purposes. This, in turn, encourages manufacturers to innovate and produce more cost-effective and efficient green technologies. Additionally, the National Electric Mobility Mission Plan (NEMMP), which promotes the use of electric vehicles (EVs), has spurred the growth of the EV market by prioritising EVs for public transport and government fleets.

Enhanced Public Image: Government entities that adopt GPP demonstrate a strong commitment to sustainability, enhancing their public image. For example, Karnataka’s Energy Department has been a frontrunner in adopting green building norms for government buildings, using eco-friendly construction materials and energy-efficient designs. Similarly, the Indian Railways' commitment to becoming a net-zero carbon emitter by 2030, through procurement of green technologies like electric locomotives and solar-powered stations, improves its public reputation as a sustainability leader. These initiatives not only highlight the government’s role in environmental preservation but also inspire confidence among the public.

3.5 Public Procurement (Preference to Make in India) Order, 2017

The Public Procurement (Preference to Make in India) Order, 2017[14] was introduced by the Government of India as part of its broader "Make in India" initiative which aims to transform India into a global manufacturing hub. This order is designed to give preference to domestically produced goods and services in public procurement processes, thereby promoting local manufacturing and reducing dependence on imports.

Promotion of Local Industries: The Order prioritises domestically manufactured products, stimulating the growth of local industries and strengthening the supply chain. It particularly supports small and medium enterprises (SMEs) in sectors like electronics, textiles and machinery, which may otherwise struggle against imports.

Support for Sustainable Practices: By fostering local production, the Order encourages industries focused on renewable energy and eco-friendly technologies. This benefits manufacturers of solar panels and energy-efficient appliances.

Enhancing Competitiveness: The Order drives domestic producers to innovate and improve their offerings to comply with government procurement standards. This heightened competition enhances product quality and cost-effectiveness, benefiting consumers and advancing technology across sectors like renewable energy and waste management.

Job Creation and Skill Development: Local manufacturing boosts job creation, particularly in rural and semi-urban areas. As industries grow, the demand for skilled labour increases, prompting skill development initiatives and vocational training, facilitated by government partnerships with industry stakeholders



3.6 Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012

The Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012[15] mandates that central ministries, departments and public sector undertakings allocate at least 25% of their annual procurement to MSEs, creating significant market opportunities for these enterprises.
The policy promotes sustainable practices by encouraging the procurement of energy-efficient and eco-friendly products, while also streamlining the qualification process through a single-point registration scheme. It reserves specific items exclusively for MSEs, ensuring guaranteed opportunities and levelling the playing field against larger corporations. Furthermore, it provides financial and technical assistance to enhance MSEs competitiveness, contributing to economic growth and job creation, particularly in rural areas. Overall, the order fosters innovation in green technologies and encourages sustainable procurement.

3.7 Policies in Place for Public Procurement for Renewable Energy

The Ministry of New and Renewable Energy (MNRE) outlines various schemes and guidelines aimed at promoting SPP in the renewable energy sector in India.

- **The Renewable Purchase Obligation (RPO)**[16] is a regulatory mandate that requires certain entities, including distribution companies and large consumers, to procure a specified percentage of their energy from renewable sources. This initiative promotes market demand for clean energy, encouraging investments in renewable energy generation.

- **The Guidelines for Tariff-Based Competitive Bidding**[17] serve as a framework to facilitate the procurement of power from grid-connected renewable energy projects. By ensuring transparency and competitiveness in pricing, these guidelines help create a favourable environment for attracting investments in the renewable sector.

- **The Public Procurement Policy for Renewable Energy**[18] encourages public sector undertakings (PSUs) to adopt renewable energy projects in their procurement practices. This policy not only promotes the use of green technologies but also aligns public sector investments with national sustainability goals.

- **The Energy Efficiency Services Limited (EESL)**[19] initiative plays a critical role in promoting the adoption of energy-efficient technologies and renewable energy projects. By supporting public entities in sustainably procuring energy, EESL helps reduce overall energy consumption and enhances the efficiency of public sector operations.

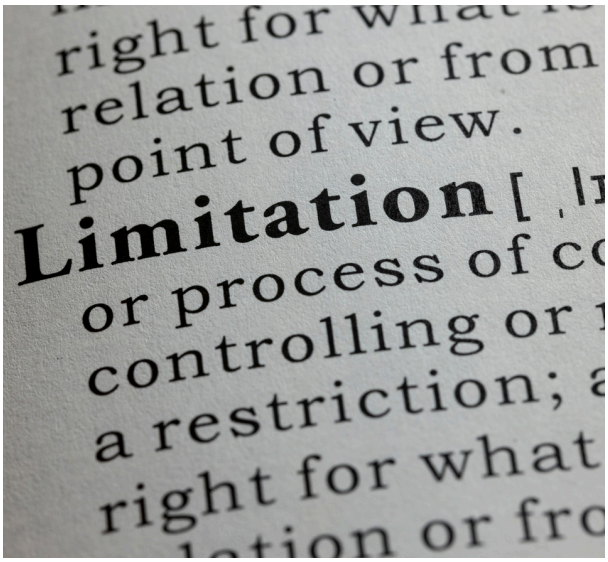
GAPS IN INDIA'S SPP POLICY

4.1 General Financial Rules (GFR)

India's procurement policies often remain voluntary, particularly when it comes to sustainability in the energy sector. While guidelines for sustainable practices exist, there are no enforceable mandates that compel public agencies to adopt these principles consistently. The General Financial Rules (GFR), in particular, lack a mandated focus on sustainability, resulting in inconsistent application across government departments. Sustainability criteria are not universally integrated and comprehensive guidelines for sustainable procurement are absent, leaving adoption largely voluntary. Without formal incentives, green procurement is deprioritised, slowing sustainable uptake.

Furthermore, while the GFR emphasises efficiency and transparency, it lacks mechanisms for monitoring or evaluating the sustainability impact of procurement decisions. The GFR serves as the foundation for public procurement but lacks explicit sustainability mandates. Additionally, the GFR provides flexibility for departments to adopt sustainable practices through clauses on life-cycle costing and energy efficiency. Rules like 136, 173, 217 and 218 offer a framework for integrating sustainability.

4. 2 TASK FORCE ON SUSTAINABLE PROCUREMENT (SPP)



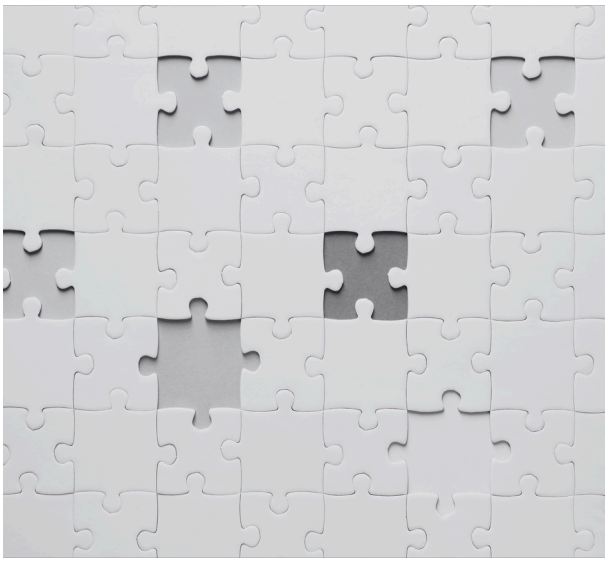
- Since its establishment in 2018, the Task Force on Sustainable Procurement (SPP) has made limited progress in enacting a National Sustainable Procurement Action Plan and in fostering visible adoption of its recommendations. The absence of an enforceable SPP framework across government agencies has led to voluntary and inconsistent implementation.

- Additionally, underdeveloped guidelines for incorporating sustainability into key product and service categories hinder smooth integration into procurement processes. Without a standardised mechanism to track SPP practices, it remains challenging to measure progress across government bodies.

- Finally, insufficient efforts in awareness and capacity-building limit procurement officers' understanding and adoption of SPP practices, further slowing down meaningful implementation. While the Task Force outlined a roadmap for SPP adoption, implementation remains limited due to capacity gaps among procurement officials and the insufficient availability of green-certified products.

Despite the roadmap, the Task Force has yet to deliver concrete results, with no action plan or significant progress reported. The complexity of balancing stakeholder interests has further hindered its implementation.

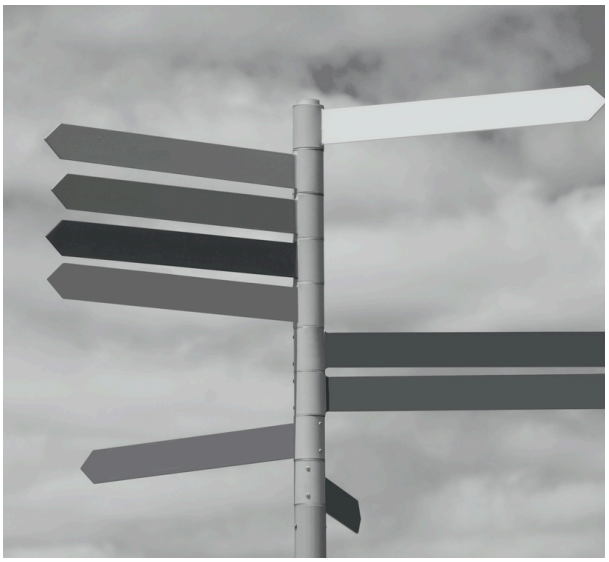
4. 3 NATIONAL ACTION PLAN ON CLIMATE CHANGE (NAPCC)



- The National Action Plan on Climate Change (NAPCC) and its missions face several implementation gaps, including uneven progress across states and sectors due to fragmented adoption and delays, limiting overall impact. State-level integration remains inconsistent, with many states slow to align their strategies with national missions, leading to uncoordinated climate actions.
- Public awareness and engagement are under emphasised, leaving businesses and individuals less informed about their roles in climate initiatives.
- Insufficient data and monitoring mechanisms further hinder transparency, making it difficult to assess progress against climate goals.
- Scaling renewable energy under the National Solar Mission (NSM) is hampered by challenges like land acquisition and financing. Moreover, while securing land for large-scale solar projects is often viewed as a governmental hurdle, the broader impact on communities must also be considered. The conversion of agricultural land into solar farms can displace farmers, reduce cultivable land and contribute to food insecurity.

While the NAPCC promotes energy efficiency and renewable adoption, explicit SPP guidelines are missing. Programs like the National Solar Mission and NMEEE influence procurement indirectly but lack procurement-specific targets.

4.4 GREEN PUBLIC PROCUREMENT (GPP) IN INDIA



- India's Green Public Procurement (GPP) policy is hampered by several gaps,[20] including the absence of a sector-specific GPP guidelines and high upfront costs of green products further hinder adoption. India lacks robust sector-specific GPP guidelines and the high upfront costs of green products further hinder adoption comprehensive nationwide framework that mandates green procurement across all sectors.

- While some government departments have made progress in integrating green criteria, the adoption of GPP practices is inconsistent among public sector organisations, particularly due to unclear guidelines and incentives.

- Limited awareness and capacity among procurement officials hinder the effective evaluation and incorporation of environmental criteria in procurement decisions.

- Additionally, the lack of standardised environmental criteria creates inconsistencies in evaluating tenders, while a fragmented market for green products poses challenges for suppliers.

- There are also no formal mechanisms to monitor or evaluate GPP initiatives, making it difficult to assess their effectiveness and environmental impact.

- Lastly, cost considerations often overshadow environmental factors, as green products can be more expensive initially, limiting GPP's scope in budget-constrained departments.

Although India has sectoral frameworks like the BEE Standards, Labelling Scheme and Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles (FAME), these are fragmented and need consolidation for consistent GPP implementation. Barriers to GPP adoption include the lack of a unified framework, high initial costs, limited awareness, inadequate availability of green products and SME resistance to compliance.

4.5 PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA) ORDER, 2017

- The Public Procurement (Preference to Make in India) Order faces several challenges in promoting sustainability alongside local manufacturing. While it aims to support domestic industries, it does not explicitly prioritise sustainable or green products, potentially conflicting with environmental goals, especially in sectors where domestic offerings may fall short of sustainability standards.
- Small and medium enterprises (SMEs) often struggle to comply with quality and certification requirements, limiting their participation in government tenders.
- Additionally, domestically produced goods may not align with global efficiency standards, particularly in renewable energy and energy-efficient appliances. Bureaucratic hurdles further delay certification and tendering processes for SMEs, hindering their involvement.
- Additionally, the lack of standardised environmental criteria creates inconsistencies in evaluating tenders, while a fragmented market for green products poses challenges for suppliers.
- Moreover, the lack of targeted support for sectors producing green technologies and the perception of the order as protectionist may deter foreign investment, which is crucial for technology transfer and innovation that could advance India's sustainability objectives.

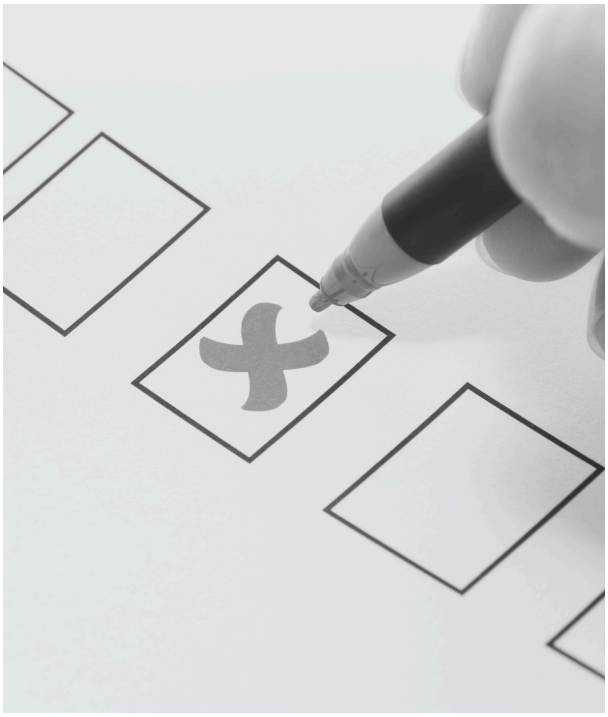
However, challenges persist, as non-compliance remains a concern, with restrictive practices in nearly 40% of tenders. Ministries often fail to prioritise sustainability and monitoring mechanisms need strengthening.

4.6 PUBLIC PROCUREMENT POLICY FOR MICRO AND SMALL ENTERPRISES (MSES) ORDER, 2012

- The policy promoting procurement from Micro and Small Enterprises (MSEs) lacks a clear focus on sustainability, as it does not provide consistent incentives or guidelines for prioritising eco-friendly products, thereby limiting the potential for driving SPP through MSEs.
- Compliance challenges, particularly for those in rural areas, arise from technical, quality and certification requirements, hindering their participation in contracts for sustainable products.
- Additionally, while the policy encourages innovation, it fails to explicitly foster green technology development among MSEs, which could support broader sustainability goals.
- SEs also struggle with accessing procurement opportunities due to bureaucratic obstacles, lack of awareness and limited capacity.
- Monitoring and evaluation of the environmental impact of procured products is insufficient, making it difficult to assess the policy's contribution to sustainability.
- Furthermore, MSEs in the renewable energy sector often lack the specialised support and incentives necessary to scale their operations and compete effectively with larger enterprises, restricting their involvement in public procurement.

While the policy supports small enterprises, it has a limited impact on promoting green technologies. MSEs face barriers such as financial constraints and certification challenges. However, challenges remain, including the limited focus on green technologies due to high costs, lack of awareness and delayed payments, with dues exceeding ₹50,000 crore.

4.7 GAPS IN PUBLIC PROCUREMENT POLICIES FOR RENEWABLE ENERGY



- The enforcement of Renewable Purchase Obligations (RPOs) in India faces significant challenges, as compliance varies across states and entities and penalties for non-compliance are inconsistently applied, undermining the policy's effectiveness.
- Furthermore, current renewable energy policies tend to favour large corporations and public sector undertakings (PSUs), making it difficult for small-scale renewable energy providers, including local Micro and Small Enterprises (MSEs) and startups, to compete in competitive bidding processes.
- There is also a lack of cohesive coordination among various policies promoting renewable energy procurement, leading to inefficiencies, particularly between the RPO and competitive bidding frameworks.
- Additionally, the focus on short-term projects within procurement guidelines discourages long-term investment in renewable energy infrastructure, which could enhance stability and participation from renewable energy companies.
- Despite the existing policies, many public entities remain unaware of the full range of renewable energy procurement options, resulting in slow adoption of green energy technologies.
- Lastly, current policies emphasise cost-competitiveness over innovation, failing to adequately support the development of advanced technologies like battery storage or hybrid energy systems, which are essential for sustainable energy's future.

While instruments like RPOs indirectly support renewable energy procurement, enforcement remains weak across states due to inadequate infrastructure and monitoring mechanisms.

RECOMMENDATIONS

5.1 GENERAL RECOMMENDATIONS

5.1.1. Develop a Sector-Specific SPP Framework

Recommendation: A sector-specific SPP framework for the energy sector is essential to ensure effective implementation tailored to its unique challenges and sustainability goals. Given the sector's significant environmental impact and policy complexities, a dedicated framework would provide clear guidelines for integrating sustainability into energy procurement decisions. This would help address issues such as lifecycle emissions, energy efficiency standards and the procurement of renewable energy infrastructure. By focusing on sector-specific needs, the framework can drive consistency, enhance accountability and facilitate the adoption of sustainable procurement practices that align with India's clean energy transition.

Global Example: Canada's Federal Sustainable Development Strategy (FSDS)[21] includes a comprehensive framework for SPP. The FSDS includes sector-specific targets for clean energy procurement and reducing greenhouse gas emissions in government operations This sectoral approach ensures that procurement in the energy sector aligns with Canada's climate commitments and net-zero goals.

5.1.2. Strengthen Enforcement Mechanisms

Recommendation: To ensure compliance with Renewable Purchase Obligations (RPOs) and green procurement mandates, it is crucial to introduce stringent penalties and effective incentives. Financial penalties should deter non-compliance, while incentives like tax breaks or preferential procurement can reward early adopters and those exceeding targets.

Global Example: The European Union's Renewable Energy Directive (RED II)[22] sets binding renewable energy targets for member states, backed by enforcement mechanisms to ensure compliance. Member states are required to establish penalty systems for failing to meet renewable energy targets and implement incentives such as feed-in tariffs, tax reductions and green certificates to encourage compliance. This dual approach of penalties and incentives has significantly increased renewable energy adoption across the EU

5.1.3. Enhance Capacity-Building and Awareness Programs

Recommendation: Regular training sessions, workshops and e-learning programs for procurement officials and stakeholders are essential to improve understanding and application of SPP principles. These initiatives will equip participants with the knowledge and tools needed to effectively integrate sustainability into procurement processes.

Global Example: South Korea's Green Public Procurement (GPP) framework includes comprehensive capacity-building initiatives specifically tailored to the energy sector. The Korean government organises regular training programs, workshops and online courses for procurement officials and stakeholders, focusing on integrating energy efficiency and renewable energy criteria into procurement processes. These initiatives are supported by the Korea Environmental Industry & Technology Institute (KEITI),[23] which provides practical tools, case studies and technical assistance to enhance the understanding and implementation of sustainable procurement in the energy sector.

5.1.4. Promote Policy Coordination and Integration

Recommendation: To ensure seamless coordination and effective implementation of sustainability policies, it is vital to establish inter-ministerial committees or task forces. These groups would facilitate cross-sector collaboration, align policies and eliminate silos between ministries. By coordinating efforts across various governmental sectors, these committees can ensure that policies promoting sustainability are consistently and comprehensively applied, fostering a more unified approach to sustainable development

Global Example: The Netherlands' National Action Plan for Sustainable Public Procurement[24] integrates climate, energy and waste policies to ensure cohesive implementation. This collaborative approach between ministries has helped streamline the country's public procurement processes and drive sustainable outcomes.

5.1.5. Support Small and Medium Enterprises (SMEs)

Recommendation: To ensure that Small and Medium Enterprises (SMEs) can meet sustainability standards and actively participate in public tenders, it is crucial to introduce targeted financial and technical assistance programs. These programs could offer subsidies, grants, or low-interest loans to help SMEs upgrade their processes to meet environmental standards, as well as provide technical support to guide them through the requirements of sustainable procurement. By offering such assistance, SMEs will be better equipped to compete in green procurement, fostering a more inclusive and sustainable market.

Global Example: Japan's Green Purchasing Act[25] actively supports SMEs in aligning with sustainability standards and participating in public procurement. The Act mandates public institutions to prioritise eco-friendly products and services while providing SMEs with resources such as training programs, technical assistance and simplified procurement procedures. These initiatives help SMEs enhance their capacity to meet green procurement criteria, ensuring their active participation in the government's SPP processes.

5.1.6. Standardise Environmental Criteria

Recommendation: To ensure consistency and effective implementation of sustainable procurement in the energy sector, it is essential to develop energy-specific environmental standards and evaluation metrics. These standards should be tailored to address the unique needs, impacts and sustainability priorities of the energy sector, such as lifecycle emissions, energy efficiency and renewable energy integration while maintaining uniformity across regions and agencies. By establishing clear, standardised criteria for

energy-related products and services, procurement decisions can be more transparent and stakeholders will have a well-defined framework to assess environmental performance and support the transition to a low-carbon energy system.

Global Example: The United States Environmental Protection Agency (EPA) sets energy-specific standards through initiatives like ENERGY STAR and the Green Power Partnership. These programs provide clear guidelines for energy efficiency and renewable energy adoption,[26] ensuring that environmental criteria are consistently incorporated into procurement decisions. Such frameworks enable public agencies and businesses to prioritise sustainable energy technologies and align procurement practices with decarbonisation goals, offering a model for advancing SPP in the energy sector.

5.1.7. Establish Monitoring and Evaluation Mechanisms

Recommendation: To ensure the effectiveness of SPP initiatives, it is crucial to establish a centralised system for monitoring and evaluation. This system should use clearly defined Key Performance Indicators (KPIs) to measure the impact of SPP efforts, track progress and identify areas for improvement. Regular audits and transparent reporting mechanisms will further enhance accountability and provide valuable insights into the effectiveness of policies.

Global Example: Canada's Federal Sustainable Development Strategy (FSDS)[27] includes detailed reporting mechanisms to track progress on green procurement goals. The FSDS employs a set of KPIs to evaluate the performance of procurement policies, tracks their impact on sustainability goals and ensures transparency through public reporting.

5.1.8. Incorporate Life Cycle Cost Analysis (LCCA)

Recommendation: To ensure procurement decisions consider long-term environmental and economic benefits, it is essential to mandate Life Cycle Cost Analysis (LCCA) in the procurement process. LCCA evaluates the total cost of ownership, including upfront

costs, operating expenses, maintenance and disposal costs, along with the environmental impact over the product's lifecycle. This includes the extraction stage, where raw material sourcing and processing contribute significantly to environmental degradation, resource depletion and emissions. By adopting LCCA, procurement decisions can prioritise sustainable solutions that may have higher initial costs but offer greater economic and environmental benefits over time.

Global Example: Norway's Public Procurement Policies[28] require the application of LCCA, particularly for energy-intensive projects. This approach has encouraged the adoption of energy-efficient technologies and solutions that reduce operating costs and environmental impacts throughout the lifecycle of projects.

5.1.9. Introduce Green Procurement Financing

Recommendation: To promote the adoption of sustainable products and technologies in public procurement, it is vital to establish green finance schemes. These can include low-interest loans, grants, tax incentives, or other financial instruments that reduce the cost burden of transitioning to sustainable practices. By providing targeted financial support, such schemes can encourage both public agencies and suppliers to prioritise green procurement, driving market demand for environmentally friendly products and technologies.

Global Example: China's Green Credit Guidelines[29] serve as an excellent example of leveraging finance to promote sustainability. These guidelines provide financial support, such as preferential loans, to public agencies and organisations undertaking green procurement projects. This approach not only reduces the financial barriers to adopting sustainable practices but also incentivises innovation and investment in green technologies.

5.1.10. Develop Local Supply Chains for Green Products

Recommendation: To strengthen the availability and adoption of sustainable products, it is crucial to promote local manufacturing through fiscal incentives, tax rebates and supportive policies. Encouraging domestic production of eco-friendly products reduces

dependency on imports, lowers the carbon footprint associated with transportation and boosts local economies. Tailored incentives can attract manufacturers to invest in sustainable technologies and innovation, creating a robust ecosystem for green products while aligning with national sustainability goals.

Global Example: Germany's Renewable Energy Sources Act (EEG)[30] is a prime example of how fiscal incentives and supportive policies can drive local manufacturing and adoption of sustainable products in the energy sector. Introduced in 2000, the EEG provided feed-in tariffs (FiTs) and priority grid access for renewable energy producers, incentivising domestic manufacturing of renewable energy components like solar panels, wind turbines and energy storage systems.

5.1.11. Foster Public-Private Partnerships (PPPs)

Recommendation: Public-private partnerships (PPPs) can drive innovation, improve efficiency and bring specialised knowledge to large-scale projects, enabling more effective adoption of sustainability measures. By fostering collaboration, governments can address resource gaps, share risks and create mutually beneficial outcomes that align with long-term sustainability goals.

Global Example: Australia's Commonwealth Procurement Rules[31] prioritise public-private partnerships to integrate sustainability into procurement processes, particularly for large-scale infrastructure and development projects. Through these partnerships, private entities contribute innovative solutions and technologies that enhance project outcomes while meeting sustainability criteria.

5.1.12. Address Budgetary Constraints

Recommendation: To overcome cost-related barriers and ensure the effective implementation of SPP, governments should allocate specific budget provisions within their spending plans. Dedicated funding for sustainable procurement can help offset the often higher initial costs of eco-friendly products and services, making it easier for public agencies to prioritise sustainability without financial constraints. This approach

ensures a steady commitment to green procurement and encourages suppliers to innovate and provide cost-effective sustainable solutions.

Global Example: Sweden's Sustainable Procurement Program exemplifies this approach by allocating a designated percentage of public funds[32] specifically for eco-friendly procurement. This financial commitment enables public agencies to integrate sustainability into their procurement decisions, even for high-cost green technologies.

5.1.13. Include Sustainability in Vendor Criteria

Recommendation: To enhance accountability and transparency in public procurement, governments should mandate sustainability disclosures and certifications as part of the vendor evaluation process. Requiring vendors to demonstrate their adherence to sustainability standards through disclosures or recognised certifications ensures that only environmentally and socially responsible suppliers participate in public tenders. This measure not only drives market demand for sustainable practices but also encourages vendors to adopt greener operations and improve their environmental, social and governance (ESG) performance.

Global Example: The UK's Social Value Act (2012)[33] incorporates sustainability criteria into public procurement processes, emphasising the need to consider social, environmental and economic impacts during vendor evaluation. By mandating the inclusion of sustainability factors, the Act holds suppliers accountable and fosters a culture of responsibility within the supply chain.

5.1.14. Encourage Citizen Engagement

Recommendation: Enhancing transparency in public procurement is essential to ensure accountability and public trust. Governments should publish detailed procurement data, including information on sustainability criteria, vendor performance and the

environmental impact of procured goods and services. Additionally, inviting public feedback on major procurement projects fosters greater stakeholder engagement and helps identify potential issues early. This approach ensures that procurement practices remain aligned with sustainability goals while promoting openness and inclusivity in decision-making processes.

Global Example: Denmark's Open Data on Public Procurement[34] initiative exemplifies this strategy by providing citizens access to detailed procurement data, including sustainability metrics. This platform allows the public to track the integration of sustainability in procurement practices, ensuring greater accountability and enabling constructive feedback.

Bridging identified gaps will align India's policies with global standards and promote a more sustainable and efficient energy sector.

5.2 Policy-Specific Recommendations for Strengthening Sustainable Public Procurement

These recommendations are based on in-depth analysis of secondary data from existing reports and studies, ensuring that the suggestions are both evidence-based and contextually relevant. They are also grounded in expert inputs from Bipul Chattopadhyay (CUTS International), Shaily Kedia (TERI) and a few others who preferred to remain anonymous.

5.2.1 General Financial Rules (GFR)

A revision of the General Financial Rules (GFR) is essential to embed sustainability into procurement decisions. This can be achieved by:

- Incorporating lifecycle cost assessments, energy efficiency benchmarks and environmental certifications as standard procurement criteria.
- Ensuring that sustainability considerations extend beyond the lowest-cost principle to account for long-term environmental and economic benefits.

5.2.2 Enhancing the Government e-Marketplace (GeM)

The Government e-Marketplace has significantly improved procurement transparency; however, further enhancements are needed to prioritise sustainability:

- Introducing green product tags and eco-friendly filters to facilitate sustainable choices.
- Mandating bid criteria that assess energy efficiency, carbon footprint and recyclability of products.
- Prioritising products with sustainability certifications such as Ecomark and ISO 14001.
- Incentivising sustainable purchases through preferential pricing, tax benefits, or procurement quotas for certified green products.

5.2.3. Strengthening the Task Force on SPP

To accelerate the adoption of SPP, the task force must focus on:

- Capacity building and training programs for procurement officials to mainstream green procurement practices.
- Enhanced inter-ministerial coordination to ensure policy coherence and implementation.
- Incentives for sustainable production, encouraging industries to align with green manufacturing norms.

5.2.4. Aligning SPP with the National Action Plan on Climate Change (NAPCC)

SPP must be deeply integrated into India's climate strategy by:

- Embedding green procurement mandates within the objectives of NAPCC missions.
- Developing sector-specific green procurement guidelines that align procurement with climate action goals.
- Introducing enforceable regulations to ensure SPP compliance.
- Allocating dedicated funding for sustainability initiatives within NAPCC to drive long-term impact.

5.2.5. Strengthening Green Public Procurement (GPP) Implementation

To overcome barriers in GPP adoption, the following measures are critical:

- Mandatory sustainability criteria in procurement tenders.
- Financial incentives and tax benefits for procuring eco-friendly products.
- Comprehensive training programs to equip procurement officials with the knowledge to evaluate green products effectively.
- Integration of Ecomark-certified products into government procurement databases.
- Accountability mechanisms in performance evaluations to ensure adherence to green procurement policies.

5.2.6. Public Procurement (Preference to Make in India) Order, 2017

While this policy fosters domestic green manufacturing, its impact on SPP can be amplified through:

- Stricter quality standards and prioritisation of green-certified products in government procurement.
- Incentives for sustainable production, including tax benefits and subsidies for green manufacturing.
- Mandating lifecycle assessments to ensure procurement decisions consider environmental impact.
- Greater accountability and transparency in procurement processes to promote eco-friendly choices.

5.2.7. Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012

Despite its significance in supporting small enterprises, key barriers hinder MSE participation in green procurement:

- Financial constraints and certification challenges prevent MSEs from adopting green technologies.
- High costs, lack of awareness and delayed payments deter MSEs from sustainable production.
- Targeted subsidies, capacity-building programs and simplified compliance mechanisms are essential to integrate MSEs into the green procurement ecosystem.
- Prioritisation of sustainability certifications and improved payment cycles can enable MSEs to align with environmental goals.

5.2.8. Public Procurement Policies for Renewable Energy

Addressing the gaps in renewable energy procurement policies requires:

- Strengthening state-level capacity and centralising monitoring systems to ensure uniform compliance.
- Improving coordination across policies to eliminate regional disparities and enforcement challenges.
- Encouraging long-term investments in renewable energy projects through stable procurement frameworks.
- Integrating innovative solutions such as battery storage into procurement strategies to enhance energy resilience and sustainability.

CONCLUSION

The successful implementation of SPP in India's energy sector requires addressing the limitations within the current policy framework.

To overcome the gaps in enforcement, awareness, policy coordination and SME participation, it is essential to develop a unified, mandatory SPP framework. This framework should incorporate clear guidelines, standardised environmental criteria and strong enforcement mechanisms to ensure consistent and effective implementation across sectors.

Recommendations such as strengthening capacity-building programs, promoting policy integration and supporting small enterprises will create a more inclusive and sustainable procurement ecosystem. Additionally, enhancing monitoring and evaluation and incorporating lifecycle cost analysis will help track progress and make procurement decisions more transparent and sustainable.

Pilot projects at the state or municipal levels can play a crucial role in testing and refining SPP strategies in real-world settings, offering valuable insights for broader implementation. By following these recommendations and drawing inspiration from global best practices, India can pave the way for a more sustainable, resilient and efficient energy procurement system, driving the country toward its environmental and climate goals.

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APPENDIX - 1

SPP Expert Insights

Interview Questions

1. **Introduction to SPP and its Importance in the Energy Sector**

- Why is SPP important for India's energy sector?
- What benefits can SPP bring to government operations in this sector?

2. Policies: General Financial Rules (GFR)

- Given that sustainability is not explicitly mandated in the GFR, how do you see its role in encouraging or enabling departments to adopt sustainable procurement practices?
- What changes would you suggest to enhance sustainability in the GFR?
- How has the Government e-Marketplace (GeM) impacted sustainable procurement?
- What additional features could GeM include to better support eco-friendly purchasing?

3. Task Force on Sustainable Public Procurement (SPP) 2018

- What outcomes do you think the Task Force on SPP has achieved so far?
- What challenges exist in implementing the Task Force's recommendations?

4. National Action Plan on Climate Change (NAPCC)

- How does the NAPCC influence public procurement practices in India?
- Could you explain how the energy consumption targets under the PAT Scheme influence public procurement decisions?
- In your opinion, how effective has NMEEE been in promoting sustainable procurement, particularly in terms of reducing greenhouse gas emissions?
- What additional strategies do you think are essential to strengthen the integration of SPP principles within the NAPCC framework?

5. Green Public Procurement (GPP)

- Are there sector-specific guidelines for implementing GPP in various industries?
- What barriers do you see in implementing Green Public Procurement in India?
- How can government agencies be encouraged to adopt green procurement practices?

6. Public Procurement (Preference to Make in India) Order, 2017

- What benefits does this order bring to SPP? How successful has it been since its notification in 2017?
- In what ways do you think the order could further promote the procurement of green and energy-efficient products?

7. Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012

- How successful has the policy been in promoting the procurement of green technologies from MSEs and are there particular areas where these efforts could be strengthened?
- What challenges do Micro and Small Enterprises face in public procurement?

8. Policies in Place for Public Procurement for Renewable Energy

- Which policies effectively promote renewable energy procurement in India?
- What are the biggest challenges in enforcing Renewable Purchase Obligations (RPOs) across different states and sectors and how can compliance be improved to meet India's renewable energy targets?

9. Gaps in India’s SPP Policy

- What significant gaps do you see in India’s current SPP policies?
- How could monitoring and evaluation of SPP policy implementation be strengthened?

10. Limitations in SPP Policy Frameworks in India

- What limitations have you encountered in India's SPP policy frameworks?
- How can these limitations be overcome for better policy implementation?

11. Recommendation and Emerging Trends in SPP

- What specific recommendations would you make to address the gaps in SPP?
- What trends or emerging practices do you foresee in sustainable procurement for the energy sector that India should prepare for?

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